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CONTINUATION OF THE
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The Auk

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EDITOR
WITMER STONE



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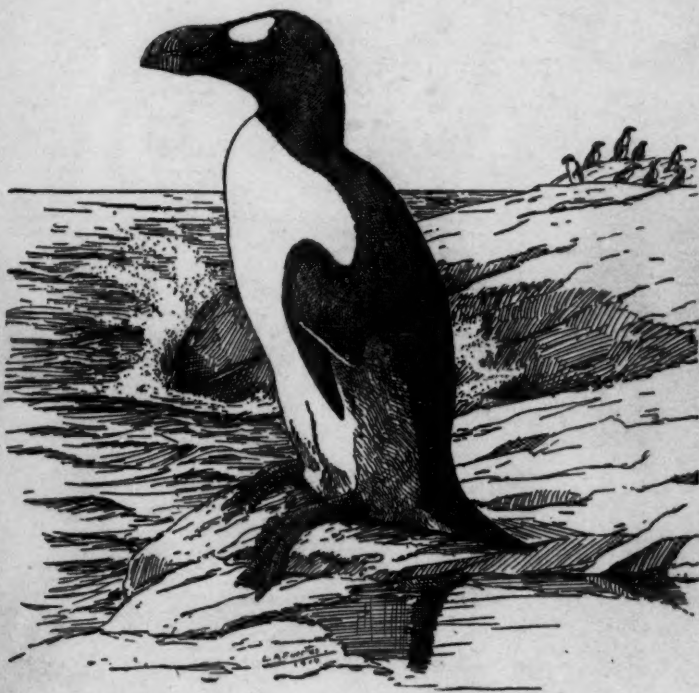
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 CHERRIE, GEORGE K., Newfane, Vt. . . . (1891-1912) (1917)1918
 CLARK, DR. HUBERT L., Mus. Comp. Zool., Cambridge, Mass. . (1886)1902
 DAWSON, WM. L., R. D. 1, Santa Barbara, Calif. . . . (1895)1905
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BARCLAY, WILLIAM, Baite, Vermont.....	1921

BARKER, MISS HELEN, 421 E. Adams St., Sandusky, O.....	1918
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BARNES, CHARLES SYDNEY, 894 Boulevard, Bayonne, N. J.....	1920
BARNES, CLAUDE T., 359 Tenth Ave., Salt Lake City, Utah.....	1908
BARNES, HON. R. MAGOON, Lacon, Ill.....	1889
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BARTON, FRANCIS CARROLL, 205 Windemere Courts, 48th and Wal- nut Sts., Philadelphia, Pa.....	1923
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BARTHAM, JOHN, Rt. 2, West Chester, Pa.....	1924
BASCOM, H. P., Stockton, St. Michael, Barbados, B. W. I.....	1922
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BOWDISH, MRS. B. S., Demarest, N. J.....	1902
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CHAMBERLAIN, EDWARD B., 73 Bull St., Charleston, S. C.....	1923
CHANDLER, W. P. JR., 718 Crawford St., Duquesne, Pa.....	1924
*CHAPIN, PROF. ANGIE C., Waban Hotel, Wellesley, Mass.....	1896
CHAPMAN, CLARENCE E., Oakland, N. J.....	1924
CHAPMAN, MRS. F. M., Englewood, N. J.....	1908
CHASE, CHAS. E., 31 Euclid Ave., East Lynn, Mass.....	1922
CHASE, SIDNEY, Nantucket, Mass.....	1904
CHEESMAN, WM. H., Biological Survey, Washington, D. C.....	1920
CHENEY, REV. R. F., St. Mark's Rectory, Southborough, Mass.....	1922
CHILDS, MISS HELEN P., Chevy Chase, Md.....	1922
CHILDS, HENRY EVERETT, 335 Pleasant St., Rumford, R. I.....	1919
CHOUTEAU, PIERRE, JR., 95 Lexington Ave., Cambridge, Mass.....	1923
CHRISTIE, R. T., Windsor, Nova Scotia, Can.....	1921
CHRISTOFFERSON, DR. KARL, Sault Ste. Marie, Mich.....	1921

CHRISTY, BAYARD H., 403 Frederick Ave., Sewickley, Pa.....	1922
CLABAUGH, E. D., 2512 Haste St., Berkeley, Calif.....	1924
CLARK, ARTHUR L., 945 Tremont Bldg., Boston, Mass.....	1920
CLARK, AUSTIN HOBART, 1818 Wyoming Ave., Washington, D. C.....	1919
CLARK, CLARENCE H., Lubec, Me.....	1913
CLARK, DR. JOSEPH P., 71 Marlborough St., Boston, Mass.....	1920
CLARK, JOSIAH H., 702 E. 23rd St. Paterson, N. J.....	1895
CLARKE, CHARLES E., 51 Summit Road, Medford, Mass.....	1907
CLARKE, GEORGE L., 219 Blackstone Blvd., Providence, R. I.,.....	1924
CLARKE, MISS MARY S., Shadwell, Va.....	1916
CLEARY, J. J., 152 Lexington Ave., Columbus, Ohio.....	1924
CLEAVES, HOWARD H., 129 Moffat Road, Waban, Mass.....	1907
CLEVELAND, MRS. LOTTA, 150 Randall St., Downers Grove, Ill.....	1922
CLINGMAN, GEORGE F., 7210 Euclid Ave., Chicago, Ill.....	1924
**COALE, HENRY K., 528 S. Linden Ave., Highland Park, Ill.....	1883
COBB, MISS ANNIE W., 22 Lake View, Arlington, Mass.....	1909
COBB, HENRY W., 151 Rumford Ave., Mansfield, Mass.....	1922
COBB, DR. STANLEY, Harvard Medical School, Boston, Mass.....	1909
COBURN, MRS. LEWIS D., East Montpelier, Vt.....	1921
COBURN, MARY E., R. F. D. 2, Ludlow, Mass.....	1922
CODMAN, JAMES M., Box 1214, Boston, Mass.....	1920
COFFIN, MRS. F. H., 1528 Jefferson Ave., Scranton, Pa.....	1921
COFFIN, MRS. PERCIVAL B., 5708 Kenwood Ave., Chicago, Ill.....	1905
COFFIN, ROBERT L., 12 Cottage St., Amherst, Mass.....	1917
COGGINS, HERBERT L., 2929 Piedmont Ave., Berkeley, Calif.....	1913
COLBURN, ALBERT E., 716 S. Flower St., Los Angeles, Calif.....	1891
COLE, JOHN L., Rt. 5, Nevada, Iowa.....	1920
COLE, DR. LEON J., Univ. Wisconsin, Madison, Wis.....	1908
COLE, W. STORRS, 614 E. Buffalo St., Ithaca, N. Y.....	1924
COLLINS, ALFRED M., 226 Columbia Ave., Philadelphia, Pa.....	1921
COLLINS, HENRY H., 28 Campbell Hall, Princeton, N. J.....	1923
COLLINS, PERCY L., 136 Vanderbilt Ave., Milltown, N. J.....	1924
COMMONS, FRANK W., 608 Chamber of Commerce, Minneapolis, Minn.....	1922
COMMONS, MRS. F. W., 608 Cham'r of Commerce, Minneapolis, Minn.....	1902
CONGER, ALLEN C., Ohio Wesleyan Univ., Delaware, Ohio.....	1919
*CONOVER, HENRY B., 6 Scott St., Chicago, Ill.....	1920
CONNER, CHESTER F., 737 Wooster Ave., Akron, Ohio.....	1924
CONSTANT, FRANK W., 57 Battle Road, Princeton, N. J.....	1924
COOK, MRS. ALBERT E., 4121 Sheridan Ave., S., Minneapolis, Minn.....	1922
COOK, MRS. C. S., JR., 70 Valentine St., West Newton, Mass.....	1924
COOK, MISS FANNY A., Crystal Springs, Miss.....	1924
COOK, FRANKLIN P., Seaside Hotel, Atlantic City, N. J.....	1920
COOK, FREDERICK W., 1604 East Harrison St., Seattle, Wash.....	1915
COOK, GRANT M., 27 Tod Lane, Youngstown, Ohio.....	1924
*COOKE, MISS MAY THACHER, 2572 University Place, Washington, D. C.....	1915

COOKMAN, ALFRED, 336 W. Pioneer Drive, Glendale, Calif.	1920
COOLIDGE, PHILIP T., 31 Central St., Bangor, Me.	1919
COPE, FRANCIS R., JR., Dimock, Pa.	1892
COPELAND, MISS ADA B., 1103 White Ave., Grand Junction, Colo.	1917
COPELAND, MANTON, 88 Federal St., Brunswick, Me.	1900
CORDIER, DR. A. H., 415 Benton Blvd., Kansas City, Mo.	1920
CORNISH, MRS. A. J., 32 Brimley Court, 84 Prescott St., Cambridge, Mass.	1923
CORRINGTON, J. D., Univ. S. C., Columbia, S. C.	1921
CORYELL, SHERMAN, 1500 Hood Ave., Chicago, Ill.	1921
COUCH, LEO K., Capitol Bldg., Olympia, Wash.	1922
COVES, DR. WM. P., 12 Monmouth Court, Brookline, Mass.	1920
COVELL, DR. HENRY H., 1600 East Ave., Rochester, N. Y.	1918
COX, RODMAN DAYTON, 56 College Ave., Rochester, N. Y.	1919
COX, WILMOT T., 91 South Ave., New Canaan, Conn.	1922
CRABB, EDWARD DRANE, 909 Mary St., Ann Arbor, Mich.	1922
CRABBE, MRS. MARY E., 80 Oak St., Far Rockaway, N. Y.	1921
CRAIG, GLENN C., 510 Trade St., Florence, Alabama.	1923
CRAMP, MRS. LILLIAN, 6606 Kimbark Ave., Chicago, Ill.	1924
CRANDALL, LEE S., Zoological Park, New York, N. Y.	1909
CRANE, MISS CLARA L., Dalton, Mass.	1904
CRANE, LESLIE, 161 Holly St., Rutland, Vt.	1922
CRIDDLE, NORMAN, Treesbank, Man.	1918
CROCKER, REV. WM. T., 263 Lexington Ave., New York, N. Y.	1920
*CROSBY, MAUNSELL S., Rhinebeck, N. Y.	1904
CROSS, ALBERT ASHLEY, Huntington, Mass.	1918
CROSSMAN, ANNIE F., 49 Clinton Ave., Pittsfield, Mass.	1920
CROWELL, MISS J. OLIVIA, Dennis, Mass.	1918
CROWELL, MISS SARAH B., Dennis, Mass.	1924
CUDWORTH, WARREN H., 15 Beacon Ave., Norwood, Mass.	1919
CUMMINGS, PROF. BYRON, Univ. of Arizona, Tucson, Arizona.	1923
CUMMINGS, MISS EMMA G., 16 Kennard Road, Brookline, Mass.	1903
CUNNINGHAM, WALTER, 3009 Dunham Ave., Kansas City, Mo.	1919
CURRIE, ROLLA P., 632 Keefer Pl., Washington, D. C.	1895
CURRIER, EDMONDE SAMUEL, 416 E. Chicago St., St. John's Sta., Portland, Ore.	1894
CURRY, HASKELL BROOKS, 10 Remington St., Cambridge, Mass.	1916
CURTIS, CHARLES P., 244 Beacon St., Boston, Mass.	1915
CURTIS, ROY Q., 11 W. 76th St., New York, N. Y.	1919
CURTIS, WILLIAM W., 267 Neumboldt Ave., Roxbury, Mass.	1924
CUTLER, MRS. FREDERICK M., Box 362, Rio Piedras, P. R.	1923
CUTTER, MISS LUCIA B., Jaffrey, N. H.	1920
CUYER, WM. KENNETH, 1216 W. 22nd St., Austin Texas.	1923
DALES, MRS. MARIE, 14 24th St., Sioux City, Iowa.	1924
DALEY, MISS MARY WOOD, Darling P. O., Delaware Co., Pa.	1920
DANE, MRS. ERNEST B., Chestnut Hill, Mass.	1912

DANFORTH, STUART T., McGraw Hall, Ithaca, N. Y.....	1916
DANIELS, EDWARD S., 7th and Elm Sts., St. Louis, Mo.....	1919
DARLEY, MRS. WM. M., Box 245, Monte Vista, Colo.....	1922
DARLINGTON, P. J., JR., 84 Corey Road, Brookline, Mass....	1923
DAVENPORT, MRS. ELIZABETH B., 15 Green St., Brattleboro, Vt.....	1898
DAVIDSON, DR. A. M., 856 Palmerston Ave., Winnipeg, Man., Can...	1922
DAVIDSON, MRS. GAYLORD, 2407 Lake Place, Minneapolis, Minn.....	1921
DAVIS, MISS BERTHA E., 69 Cypress St., Brookline 46, Mass.....	1920
DAVIS, HENRY W., 10 S. Baton Rouge Ave., Ventnor, Atlantic City, N. J.....	1922
DAVIS, JOHN M., 723 L. St., Eureka, Calif.....	1920
DAVIS, R. N., Everhart Museum, Scranton, Pa.....	1920
DAVIS, RICHARD J., 158 Pleasant St., Arlington, Mass.....	1922
DAWSON, MISS SALLIE, Marshall, Ill.....	1924
DAY, ALBERT M., Biological Survey, Laramie, Wyoming.....	1923
DAY, CHESTER SESSIONS, 16 Browne St., Brookline 47, Mass.....	1897
DEAN, R. H., 720 Quintard Ave., Anniston, Ala.....	1913
DEANE, GEORGE CLEMENT, 80 Sparks St., Cambridge, Mass.....	1899
DEARBORN, SAMUEL S., 77 Summer St., Room 96, Boston, Mass.....	1919
DECKER, F. R. Kiona, Washington.....	1923
DEGARIS, DR. CHARLES F., Johns Hopkins Univ., Baltimore, Md....	1923
DELOACH, R. J. H., 5541 Dorchester St., Chicago, Ill.....	1910
DELURY, DR. RALPH E., Dominion Observatory, Ottawa, Canada....	1920
DEMILLE, JOHN B., 559 W. 183rd St., New York, N. Y.....	1922
DEMMLER, MISS ANNE L., Rt. 1, Evans City, Pa.....	1924
DENMEAD, TALBOTT, 2830 St. Paul St., Baltimore, Md.....	1923
DENNIS, DR. LABAN, 71 Ridge Ave., Orange, N. J.....	1921
DENNY, MISS MARTHA, 111 High St., Brookline, Mass.....	1924
DENSMORE, MISS MABEL, 910 4th St., Red Wing, Minn.....	1910
DERBY, DR. RICHARD, Oyster Bay, L. I., N. Y.....	1898
DEVANY, J. L., Annapolis Royal, Nova Scotia, Can.....	1921
DEWEY, DR. CHARLES A., 174 Spring St., Rochester, N. Y.....	1900
DEWIS, DR. JOHN W., 270 Commonwealth Ave., Boston, Mass.....	1920
DEXTER, PROF. JOHN SMITH, Univ. of Porto Rico, Rio Piedras, Porto Rico.....	1919
DICE, DR. LEE RAYMOND, Univ. Mus., Ann Arbor, Mich.....	1918
DICKENS, MISS ELIZABETH, Block Island, R. I.....	1921
DILLE, FREDERICK M., Valentine, Neb.....	1892
DINGLE, EDWARD VON S., Mt. Pleasant, S. C.....	1920
DIXON, FREDERICK J., 111 Elm Ave., Hackensack, N. J.....	1891
DOOLITTLE, E. A., Box 44, Painesville, Ohio.....	1921
DOUGHERTY, MRS. H. T., 75 Central St., Auburndale, Mass.....	1924
DREIER, THEODORE, 27 Weld Hall, Cambridge, Mass.....	1919
DRESSEL, EVAN C., Rt. 2, Poland, Ohio.....	1924
DRUMMOND, MISS MARY, 510 Spring Lane, Lake Forest, Ill.....	1904
DUBOIS, ALEXANDER D., 327 S. Glenwood Ave., Springfield, Ill.....	1918

DUFOR, MISS LAURA E., 1524 Boyd Ave., Racine, Wis.....	1924
DUDLEY, MRS. SARAH H., Lyman School Branch, Berlin, Mass.....	1924
DUER, HARRY ELDON, 519 Schofield Bldg., Cleveland, Ohio.....	1921
DUFRESNE, FRANK, Nome, Alaska.....	1924
DUNBAR, MISS LULA, Rt. 1, Elkhorn, Wis.....	1918
DUNKELBERGER, H. W., P. O. Box 6, Flourtown, Montgomery Co., Pa.....	1923
DUNN, MRS. H. A., Rt. 3, Box 63, Athol, Mass.....	1920
DUNN, JOHN W. G., 1033 Lincoln St., St. Paul, Minn.....	1923
DURFEE, OWEN, 727 Madison St., Fall River, Mass.....	1887
DURFEE, MRS. OWEN, 727 Madison St., Fall River, Mass.....	1923
DUSTIN, MISS FLORENCE S., Mason, N. H.....	1922
DYE, HAROLD G., 18 Conklin Ave., Rochester, N. Y.....	1921
DYKE, ARTHUR CURTIS, 205 Summer St., Bridgewater, Mass.....	1902
EADIE, GUY L., Berwyn, Pa.....	1920
EANES, ROBERT H., 2404 Speedway, Austin, Texas.....	1923
EARL, THOMAS M., 590 E. Spring St., Columbus, Ohio.....	1921
EARLE, OSBORNE, 17 Bates St., Cambridge, Mass.....	1919
EASTMAN, COL. FRANCIS B., P. O. Box 334, Baltimore, Md.....	1909
EASTMAN, MISS SARAH C., 51 Chapel St., Portland, Me.....	1920
EATON, MISS MARY S., 8 Monument St., Concord, Mass.....	1909
EATON, SCOTT HARRISON, Box 653, Lawrenceville, Ill.....	1912
EATON, WARREN FRANCIS, c/o Wellington, Sears & Co., 66 Worth St., New York, N. Y.....	1921
EDDY, MRS. CLINTON L., 65 Lenox St., West Newton, Mass.....	1924
EDSON, JOHN M., Marietta Road, Bellingham, Wash.....	1886
EDSON, WM. L. G., 54 Fairview Ave., Rochester, N. Y.....	1916
EHINGER, DR. CLYDE E., Hidden Ranch, Route 1, Charleston, Wash.....	1904
EIFRIG, PROF. C. W. GUSTAVE, 504 Monroe Ave., River Forest, Ill.....	1901
EKBLAW, WALTER ELMER, 6 Woodbine St., Worcester, Mass.....	1911
ELIOT, WILLARD AYRES, 1011 Thurman St., Portland, Ore.....	1918
ELLIOTT, MRS. JANE SHIELDS, 2900 Q. St., N. W., Washington, D. C.....	1921
ELLIS, MRS. ELLA HAINES, 910 Grattan St., Los Angeles, Cal.....	1924
ELLIS, RALPH, JR., 2420 Ridge Road, Berkeley, Cal.....	1924
ELROD, MRS. WALTER DEW., Box 103, Okmulgee, Oklahoma.....	1924
EMERSON, W. OTTO, Route 1, Box 30, Hayward, Calif.....	1916
EMILIO, S. GILBERT, 156 Hobart St., Danvers, Mass.....	1922
EMLIN, ARTHUR COPE, "Awbury," Germantown, Philadelphia, Pa.....	1921
ENO, HENRY LANE, Princeton, N. J.....	1918
ERICHSEN, W. J., 2311 Barnard St., Savannah, Ga.....	1919
ESTERLY, DR. CALVIN O., Occidental College, Los Angeles, Calif.....	1921
EVANS, DR. EVAN M., 550 Park Ave., New York, N. Y.....	1916
EVANS, JOHN WAINWRIGHT, JR., Adamston, N. J.....	1924
EWING, MRS. FAYETTE C., Box 827, Alexandria, La.....	1919
EYER, GEO. A., Short Hills, N. J.....	1918
FAGAN, CHAS. L., Rt. 2, Box 58, Rahway, N. J.....	1922
FAIRMAN, MISS MARIAN, 4744 Kenwood Ave., Chicago, Ill.....	1920

FARGO, WILLIAM G., 506 Union St., Jackson, Mich.....	1923
FARLEY, FRANK L., Camrose, Alberta, Can.....	1920
FARLEY, Jack, 46 S. Broadway, White Plains, N. Y.....	1922
FAXON, ALLAN HART, 7 Edwards St., Southbridge, Mass.....	1916
FAY, S. PRESCOTT, 2 Otis Place, Boston, Mass.....	1907
*FEARING, GEO. R., 168 Beacon St., Boston, Mass.....	1924
FELGER, ALVA HOWARD, North Side High School, Denver, Colo.....	1898
FELL, MISS EMMA TREGO, Holicong, Bucks Co., Pa.....	1903
FELL, MRS. NELSON, Warrenton, Va.....	1923
FENN, ROGER C., Middlesex School, Concord, Mass.....	1924
FERGUSON, HARRY L., 247 Park Ave., New York, N. Y.....	1920
FIELD, WM. L. W., Milton Acad., Milton, Mass.....	1920
FINLAY, FRANK A., 3323 Milwaukee St., Pittsburgh, Pa.....	1924
FISH, HAROLD D., Univ Pittsburgh, Pittsburgh, Pa.....	1924
FISHER, C. A., Canton, Ohio.....	1924
FISHER, MISS ELIZABETH WILSON, 2222 Spruce St., Philadelphia, Pa.....	1896
FISHER, DR. G. CLYDE, American Mus. Nat. Hist., New York, N. Y.....	1908
FISHER, PROF. RICHARD T., Petersham, Mass.....	1924
FITCH, CONOVER, Cohasset, Mass.....	1922
FITZPATRICK, WM. J., 104 Kingston St., Boston, Mass.....	1920
FLEISHER, EDWARD, 1068 Park Place, Brooklyn, N. Y.....	1916
FLETCHER, L. B., 54 Cotswold Road, Brookline, Mass.....	1921
FLETCHER, MRS. MARY E., Proctorsville, Vt.....	1898
FLOYD, CHAS. BENTON, 454 Wolcott St., Auburndale, Mass.....	1916
FLOYD, J. L., 508 New Harter Bank Bldg., Canton, Ohio.....	1921
FOOT, DR. NATHAN CHANDLER, 1 Interwood Place, Clifton, Cin- cinnati, Ohio.....	1916
FORAN, PHILIP FULFORD, 147 Wilbrod St., Ottawa, Ontario, Can.....	1921
FORBES, RALPH E., 328 Adams St., Milton, Mass.....	1917
FORD, EDWARD R., Periodical Publishing Co., Grand Rapids, Mich.....	1920
FORD, MISS LOUISE PETIGRU, "The Heights," Aiken, S. C.....	1919
*FOSTER, FRANCIS A., Edgartown, Mass.....	1918
*FOSTER, FRANK B., P. O. Box 87, Haverford, Pa.....	1916
FOSTER, DR. G. S., 967 Elm St., Manchester, N. H.....	1921
FOTHERGILL, MISS E. RALPHINE, 208 S. Whitney St., Hartford, Conn.....	1920
FOWLER, FREDERICK HALL, 221 Kingsley Ave., Palo Alto, Calif.....	1892
FOWLER, HENRY W., Acad. Nat. Sciences, Philadelphia, Pa.....	1898
FOX, MISS CAROLINE A., Center Road, Hillsboro, N. H.....	1924
FRASER, DONALD, Johnstown, N. Y.....	1902
FREDERICK, MISS LILY, 5546 Jackson St., Pittsburgh, Pa.....	1924
FREEMAN, MISS HARRIET E., 258 Mt. Vernon St., West Newton, Mass.....	1903
FRENCH, MRS. A. J., R. F. D. 1, Carlton, Oregon.....	1921
FRENCH, DR. CHAS. E., 62 HOLYROOD Ave., Lowell, Mass.....	1923
FRENCH, CHARLES H., 950 Washington St., Canton, Mass.....	1904
FRENCH, MRS. CHAS. H., 950 Washington St., Canton, Mass.....	1908
FRENCH, DANIEL C., Glendale, Berkshire Co., Mass.....	1922

FRENCH, MRS. MENA V., Box 171, Wayland, Mass.....	1923
*FREY, MRS. EDITH K., 814 3rd St., Jackson, Michigan.....	1923
FRIEDMAN, DR. HERBERT, 32 Garden Place, Brooklyn, N. Y.....	1921
FRIEDMANN, RALPH, 32 Garden Place, Brooklyn, N. Y.....	1921
FRIEL, MISS LAURA M., 115 Pearl St., Pittsburgh, Pa.....	1924
FROST, ALLEN, c/o Trussell Mfg. Co., Poughkeepsie, N. Y.....	1919
*FUGUET, HOWARD, 560 Bullitt Bldg., Philadelphia, Pa.....	1919
FULLER, MRS. ANNIE L., Hancock, N. H.....	1922
FULLER, ARTHUR B., 2717 Euclid Ave., Cleveland, Ohio.....	1922
FULLER, HENRY C., 1348 Euclid St., Washington, D. C.....	1916
FULTON, HARRY L., 3903 W. 65th St., Chicago, Ill.....	1922
FUNK, MRS. A. B., 649 Harwood Drive, Des Moines, Iowa.....	1924
GALLOWAY, J. F., 102 S. Sixth St., Duquesne, Pa.....	1924
GANIER, ALBERT F., 2507 Ashwood Ave., Nashville, Tenn.....	1917
GARDINER, CHARLES BARNES, 175 W. Main St., Norwalk, Ohio.....	1903
GARDNER, ASTON COLEBROOK, c/o Westminster Bank, Rowlands Road, West Worthing, Sussex, England.....	1919
GARDNER, MRS. E. P., 140 Gibson St., Canandaigua, N. Y.....	1920
GARDNER, JAMES H., 121 East 6th St., Tulsa, Okla.....	1919
GARDNER, DR. LEON L., 60 Elm Ave., Takoma Park, Md.....	1924
GARDNER, MRS. W. H., Bucksport, Me.....	1920
GARLAND, MISS CAROLINE H., 65 Silver St., Dover, N. H.....	1924
GARST, DR. JULIUS, 29 Oread St., Worcester, Mass.....	1916
GAUDETTE, MISS MARIE E., Park Museum, Providence, R. I.....	1921
GEDDES, JOHN M., 331 High St., Williamsport, Pa.....	1924
GEIST, R. M., 811 Euclaire Ave., Bexley, Columbus, Ohio.....	1923
GERTH, WALTER G., Rt. 1, Beusenville, Ill.....	1918
GEY, THEODORE A., P. O. Box 363, Norristown, Pa.....	1924
GIANINI, CHAS. A., Poland, N. Y.....	1911
GIFFORD, PAUL C., 73 Whittier Ave., Olneyville, R. I.....	1921
GIFFORD, DR. HAROLD, 420 S. 36th St., Omaha, Nebr.....	1922
GIGNOUX, CLAUDE, 73 Tunnel Road, Berkeley, Calif.....	1921
GILBERT, MRS. F. M., Walpole, N. H.....	1919
GILES, ROSCOE I., 82 Newton St., Marlborough, Mass.....	1921
GILL, GEOFFREY, Lock Box 251, Huntington, L. I., N. Y.....	1924
GILLESPIE, JOHN A., 313 Sharp Ave., Glenolden, Pa.....	1923
GILLESPIE, MRS. J. A., 313 Sharp Ave., Glenolden, Pa.....	1924
GILLESPIE, WM. W., 87 N. Fremont Ave., Bellevue, Pa.....	1924
GILLIAM, ROBERT A., 901 Cedar Hill Ave., Sta. A., Dallas, Texas.....	1920
GILLIN, JAMES R., Ambler, Pa.....	1921
GILLIS, FRANK, Anoka, Minn.....	1922
GILMAN, M. FRENCH, Banning, Calif.....	1907
GILMOR, ALBERT F., 84 Garfield St., Watertown, Mass.....	1924
GLADDING, MRS. JOHN R., Thompson, Conn.....	1912
GLEASON, MRS. C. H., 700 Madison Ave., S. E., Grand Rapids, Mich.....	1917
GLENN, DONALD, 1250 Liberty St., Franklin, Pa.....	1923

GLOYD, HOWARD K., Ottawa Univ., Ottawa, Kansas.....	1920
GOELITZ, WALTER A., 22 Nunda Boulevard, Rochester, N. Y.....	1916
GOLDFRANK, ARTHUR, 1107 Windsor Blvd., Los Angeles, Calif.....	1924
GOODRICH, MISS JULIET T., Land o'Lakes, Vilas County, Wis.....	1904
GORDON, HARRY E., 307 Laburnum Crescent, Rochester, N. Y.....	1911
GORDON, KENNETH, 1402 Rosemary Lane, Columbia, Mo.....	1924
GORDON, ROBERT B., 935 8th St., Huntington, W. Va.....	1923
GORDON, SETH E., Box 368, Harrisburg, Pa.....	1924
GORMLEY, A. LIGUORI, 79 John St., N., Arnprior, Ontario, Canada....	1918
GORST, CHARLES C., 28 Beauford Road, Boston 30, Mass.....	1916
GOSS, JESSE B., 19 High St., Boston, Mass.....	1922
GOULD, JOSEPH E., 320 Springfield Ave., Campostella Heights, Nor- folk, Va.....	1889
GOWANS, MISS ETHEL, 308 S. Lincoln St., Kent, Ohio.....	1921
GRAHAM, EDW. H., Carnegie Museum, Pittsburgh, Pa.....	1924
GRANGE, WALLACE B., 1811 Jefferson St., Madison, Wis.....	1920
GRANGER, WALTER W., Amer. Mus. Nat. Hist., New York, N. Y.....	1891
GRANT, DR. ADELE L., Dept. Botany, Cornell Univ., Ithaca, N. Y....	1919
GRANT, CLEVELAND P., 433 Washington Ave., Lorain, Ohio.....	1924
GRANT, E. O., Box 127, Patten, Maine.....	1922
GRANT, WM. W., 816 S. Main St., Geneva, N. Y.....	1910
GRASETT, F. G., 535 Green Bay Road, Glencoe, Ill.....	1923
GRAVES, MRS. CHARLES B., 4 Mercer St., New London, Conn.....	1905
GRAY, A. E., 116 S. High St., Albuquerque, N. M.....	1923
GRAY, GEORGE M., Box 89, Woods Hole, Mass.....	1916
GRAY, GEORGE W., Greenvale Farm, Poughkeepsie, N. Y.....	1920
GREEN, HORACE OAKES, 220 North Ave., Wakefield, Mass.....	1917
*GREEN, MORRIS MILLER, 39 Wyoming Ave., Ardmore, Pa.....	1921
GREENE, EARLE R., 108 Orme Circle, Atlanta, Ga.....	1921
GREENLAW, JOS. M., 28 Budleigh St., Beverly, Mass.....	1920
GREENOUGH, MRS. C. N., 4 University Hall, Cambridge 38, Mass.....	1924
GREENOUGH, HENRY VOSE, 39 Worthington Road, Brookline, Mass....	1901
GREGORY, REV. C. E., Box 215, Morganton, N. C.....	1922
GREGORY, STEPHEN S., JR., 345 Barry Ave., Chicago, Ill.....	1916
GRIFFEE, WILLET E., Corvallis, Ore.....	1919
GRIFFIN, BERTRAM S., Box 17, West Newbury, Mass.....	1917
GRIM, WILLIAM H., Hamburg, Pa.....	1921
GROMME, OWEN J., Public Museum, Milwaukee, Wis.....	1924
GROSVENOR, MRS. FRANK, 320 E. Capitol St., Washington, D. C.....	1920
GUNTHERP, PROF. HORACE, c/o Margaret Carnegie Library, Mills College, Calif.....	1919
GUTHRIE, MRS. TRACY W., Edgeworth, Sewickley, Pa.....	1924
HADELER, E. W., 520 S. State St., Painesville, Lake Co., Ohio.....	1920
HADLEY, ALDEN H., Monrovia, Ind.....	1906
HAFFER, B. F., Mayetta, Kansas.....	1924
HAILE, H. PENNINGTON, 28 Edwards St., Springfield, Mass.....	1919

HAINES, ROBERT L., 54 E. Main St., Moorestown, N. J.....	1924
HALL, E. RAYMOND, Mus. Vert. Zool., Univ. of Cal., Berkeley, Calif.....	1922
HALL, F. S., State Museum, Univ. Washington, Seattle, Wash.....	1923
HALLINAN, THOMAS, 212 Madison Ave., Paterson, N. J.....	1919
HALLINEN, JOSEPH E., Cooperton, Okla.....	1919
HALVERSON, DR. HAROLD M., 312 Pearl St., Yankton, S. Dak.....	1924
HAMILL, MRS. LAFAYETTE C., 477 Grove St., Worcester, Mass.....	1924
HAMILTON, WM. JOHN JR., 110 Edgemoor Lane, Ithaca, N. Y.....	1924
HAMMOND, DR. ROLAND, 50 Boyleston Ave., Providence, R. I.....	1924
HANDLEY, CHAS. O., Beachton, Grady Co., Ga.....	1916
HANDSAKER, RALPH, Colo, Iowa.....	1922
HANKINSON, THOS. L., 96 Oakwood Ave., Ypsilanti, Mich.....	1897
HANNA, WILSON CREAL, 141 East F. St., Colton, Calif.....	1919
HARDING, RICHARD B., 94 Westbourne Terrace, Brookline, Mass....	1922
HARDING, MRS. R. B., 94 Westbourne Terrace, Brookline, Mass....	1922
HARDON, MRS. HENRY W., Wilton, Conn.....	1905
HARING, MRS. INEZ M., 1774 Delmont Ave., East Cleveland, Ohio....	1921
HARKIN, HON. JAMES B., Commr. Canadian Nat. Parks, Ottawa, Can.....	1921
HARPER, ARTHUR R., Ohio State Life Insurance Co., Columbus O....	1924
HARRINGTON, MRS. A. B., Lincoln, Mass.....	1919
HARRINGTON, DR. PAUL, 813 Bathurst St., Toronto, Ontario, Can....	1922
*HARRISON, GEO. L., JR., 400 Chestnut St., Philadelphia, Pa.....	1919
HARROLD, C. G., 478 St. Mary's Ave., Winnipeg, Manitoba, Can....	1923
HART, CECIL, Rt. 1, Box 432, Montebello, Los Angeles Co., Calif....	1921
HART, MALCOLM D., c/o Dept. Game and Inland Fisheries, Richmond, Va.....	1924
HARTLEY, GEO. INNES, Southampton, L. I., N. Y.....	1919
HARVEY, JOHN L., Mercantile Bldg., Waltham, Mass.....	1916
HASBROUCK, HENRY C., 929 West End Ave., New York, N. Y.....	1920
HASKELL, MISS SADIA, 1236 11th St., N. W., Washington, D. C....	1916
HASTINGS, WALTER E., Box 1, South Lyon, Mich.....	1921
HATHAWAY, MRS. E. L., Spring St., Rt. 1, W. Bridgewater, Mass....	1920
HATHAWAY, HARRY S., Norwood and Thorn Aves., South Auburn, R. 1.....	1897
HATHAWAY, WM. L., Safe Cabinet Co., Marietta, Ohio.....	1924
HAULTAIN, C. F., Port Hope, Ontario, Can.....	1923
HAVEMEYER, H. O., Mahwah, N. J.....	1893
HAVEMEYER, H. O., JR., Mahwah, N. J.....	1919
HAVEN, HERBERT, M. W., 500 Forest Ave., Portland, Me.....	1920
HAWES, DR. EDWARD E., Hyannis, Mass.....	1920
HAYES, EDWARD G., 50 Gibson St., Canandaigua, N. Y.....	1924
HAYES, SAMUEL P. JR., The Loomis Institute, Windsor, Conn.....	1924
HEERMANS, MARTHA, Hayden, Arizona.....	1924
HEGEMAN, MRS. CHAS. S., 39 South Fullerton Ave., Montclair, N. J.....	1923
HEGNER, FRANK A., 513 Hill St., Sewickley, Pa.....	1924
*HELME, ARTHUR H., Miller Place, N. Y.....	1888

- HELMUTH, WM. TODD, 3RD, 182 W. 58th St., New York, N. Y.....1923
HEMENWAY, AUGUSTUS, Tavern Club, Bolyston Pl., Boston, Mass...1920
HEMPHILL, ASHTON ERASTUS, Phoenix Chambers, Holyoke, Mass...1919
HENDERSON, A. D., Belvedere, Alberta, Canada.....1924
HENDERSON, JUNIUS, 1305 Euclid St., Boulder, Colo.....1903
HENDERSON, WALTER C., 8 Magnolia Parkway, Chevy Chase, Md...1917
HENDRICKSON, W. F., 276 Hillside Ave., Jamaica, N. Y.....1885
HENSHAW, SAMUEL, Mus. Comp. Zool., Cambridge, Mass.....1924
HERMAN, THEODORE L., 273 Neal Dow Ave., New Brighton, N. Y...1916
HERMAN, DR. WILLIAM C., 19 West 7th St., Cincinnati, Ohio.....1921
*HERRICK, HAROLD, 123 William St., New York, N. Y.....1905
HERRICK, NEWBOLD L., 60 Wall St., New York, N. Y.....1913
HERRICK, N. LAWRENCE, Cedarhurst, N. Y.....1917
HERRING, MRS. BURTON R., Box 832, Libertyville, Ill.....1924
HIGBEE, HARRY G., Moose Hill Bird Sanctuary, Sharon, Mass....1922
HILDRETH, MISS ELLEN E., 6 Linnaean St., Cambridge, Mass.....1922
HILL, MRS. THOMAS R., Box 491, Chautauqua, N. Y.....1903
HIMMEL, WALTER J., Macalester College, St. Paul, Minn.....1920
HINCKLEY, GEO. LYMAN, Redwood Library, Newport, R. I.....1912
HINE, ASHLEY, 8131 Euclid Ave., Chicago, Ill.....1922
HINE, PROF. JAMES STEWART, Ohio State Univ., Columbus, Ohio...1899
HITCHCOCK, FRANK H., Metropolitan Club, 1 East 60th St., New
York, N. Y.....1921
HIX, GEORGE E., 337 72nd St., Brooklyn, N. Y.....1904
HOFFMAN, IRVIN N., 1513 30th St. N. W., Washington, D. C.....1924
HOFFMAN, PAUL WM., 1573 12th St., Milwaukee, Wis.....1924
HOLDEN, CAPT. OLIVER F., Darien, Conn.....1923
HOLLAND, HAROLD MAY, Galesburg, Ill.....1910
HOLLAND, DR. WILLIAM J., Carnegie Museum, Pittsburgh, Pa.....1899
HOLLINGER, JOHN A., 722 Fulton Bldg., Pittsburgh, Pa.....1924
HOLLISTER, G. B., 4 E. 5th St., Corning, N. Y.....1919
HOLLISTER, WARREN D., Delavan, Wis.....1901
HOLLOMAN, MRS. REED, 224 Grant Ave., Santa Fe, N. Mex.....1924
HOLMAN, JOHN P., Southport, Conn.....1922
HOLMAN, RALPH H., 15 Whiting Road, Wellesley Hills, Mass.....1907
HOLT, ERNEST G., 312 Bell Bldg., Montgomery, Ala.....1911
HOMER, FRED L., 916 Adelaide St., Pittsburgh, Pa.....1924
HONYWILL, ALBERT W., JR., 2947 Collingwood Ave., Detroit, Mich..1907
HOPKINS, GEORGE I., 841 Beech St., Manchester, N. H.....1922
HORSEY, RICHARD E., Highland P'k, Reservoir Ave., Rochester, N. Y.1919
HORSFALL, ROBERT BRUCE, c/o Nature Magazine, 1214 16th St.,
N. W., Washington, D. C.....1905
HORTON, CHARLES B., 345 Fourth Ave., Pittsburgh, Pa.....1924
HOTCHKISS, NEIL, Smithsonian Institution, Washington, D. C.....1919
HOUGHTON, CLARENCE, 533 Washington Ave., Albany, N. Y.....1920
HOWATT, DR. G. A., 1922 F. St., Eureka, Calif.....1924

HOWE, CLIFTON D., Univ. of Toronto, Toronto, Ontario, Can.....	1921
HOWITT, HENRY, 52 Lyon Ave., Guelph, Ont., Canada.....	1924
HOWLAND, HENRY R., 76 Hodge Ave., Buffalo, N. Y.....	1924
HOWLAND, R. H., 164 Wildwood Ave., Upper Montclair, N. J.....	1903
HUBBARD, C. ANDRESEN, Pacific University, Forest Grove, Ore.....	1916
HUBBARD, MRS. FRANK D., 81 Barnett St., New Haven, Conn.....	1923
HUBBARD, PROF. MARIAN E., Hallowell House, Wellesley, 81, Mass.....	1916
HUDSON, MRS. L. K., Simeon, Cherry Co., Nebr.....	1922
HUEY, L. M., Nat. Hist. Mus., Balboa Park, San Diego, Calif.....	1920
HUGHES, GEO. T., Box 153, Plainfield, N. J.....	1919
HULL, MRS. BAKER, 1703 Bolton St., Baltimore, Md.....	1921
HUNN, JOHN T. SHARPLESS, 1218 Prospect Ave., Plainfield, N. J.....	1895
HUNT, CHRESWELL JOHN, 1929 S. Gunderson Ave., Berwyn, Ill.....	1919
HUNT, MISS LUCY O., 185 Beacon St., Hartford, Conn.....	1919
HUNT, RICHARD, Mus. Vert. Zool., Berkeley, Calif.....	1918
HUNTER, MRS. KATHARINE U., Cupola Farm, West Claremont, N. H.....	1923
HURD, MISS FRANCES A., 43 West Ave., S. Norwalk, Conn.....	1919
HUTCHINSON, CONSTANT E., 2ND, The Phoenix Bank, Phoenix, N. Y.....	1923
HYDE, A. SIDNEY, 606 Penn. Ave., Urbana, Ill.....	1921
HYDE, MRS. S. E., c/o Mayfield Stage, Boise, Idaho.....	1918
HYSLOP, SAMUEL, 42 Bellevue St., Newton, Mass.....	1919
LIAMS, H. P., R. F. D. 9, Knoxville, Tenn.....	1922
INGERSOLL, ALBERT M., 908 F St., San Diego, Calif.....	1885
ISHAM, CHAS. B., 909 Valley Rd., Upper Montclair, N. J.....	1891
JACKSON, DR. HARTLEY H. T., Biological Survey, Washington, D. C.....	1910
JACKSON, JOHN W., Belchertown, Mass.....	1920
JACKSON, RALPH W., R. D. 1, Box 70, Cambridge, Md.....	1918
JACKSON, ROBERT L., Box 112, Ohio, Ill.....	1924
JACOBS, WM. F., 404 So. Washington St., Waynesburg, Pa.....	1924
JACOT, E. C., Box 462, Prescott, Arizona.....	1923
JAMES, NORMAN, P. O. Drawer D2, Baltimore, Md.....	1913
JAMES, THOMAS A., Augusta, Me.....	1920
JANVRIN, DR. E. R. P., 515 Park Ave., New York, N. Y.....	1919
JAQUES, F. L., Amer. Mus. Nat. Hist., New York, N. Y.....	1924
JAY, WILLIAM, 12 Westview St., Mt. Airy, Philadelphia, Pa.....	1921
JENKS, CHAS. W., Bedford, Mass.....	1912
JENNINGS, DR. GEO. H., Jewett City, Conn.....	1918
JENNINGS, RICHARD D., 129 Harrison St., East Orange, N. J.....	1913
JENSEN, J. K., U. S. Indian School, Sante Fe, N. Mex.....	1912
JEWETT, STANLEY G., 582 Bidwell Ave., Portland, Ore.....	1906
JOHNSON, PROF. CHAS. E., College of Forestry, Syracuse, N. Y.....	1919
JOHNSON, MRS. GRACE P., Museum Nat. Hist., Springfield, Mass.....	1908
JOHNSON, WARD L., Lawrence School, Hewlett, Long Island, N. Y.....	1920
JOHNSTON, I. H., 733 Myrtle Ave., Charleston, W. Va.....	1922
JOHNSTONE, WALTER B., Edgewood, Arrow Lake, B. C., Can.....	1920
JONES, CAROLINE SEYMOUR, "Carolhurst," Bennington, Vt.....	1922

JONES, HAROLD C., 143 W. College St., Oberlin, Ohio.....	1924
JONES, JESSE L., 198 Dewey St., Edgeworth, Pittsburgh, Pa.....	1921
JONES, DR. LOMBARD CARTER, Falmouth, Mass.....	1917
JONES, S. PAUL, 425 Maple Ave., Waukesha, Wis.....	1920
JONES, WILLIAM F., Norway, Me.....	1918
JORDAN, A. H. B., Lowell, Wash.....	1888
JUDD, E. T., Cando, N. Dakota.....	1922
JUMP, MRS. EDWIN R., 97 Oakleigh Road, Newton, Mass.....	1910
JUNG, CLARENCE S., 553 Prospect Ave., Milwaukee, Wis.....	1921
KAHL, P. H. I., Carnegie Museum, Pittsburgh, Pa.....	1924
KANE, MRS. SUSAN MARY, Vaughn, Wash.....	1919
KEAYS, JAMES EDWARD, 328 St. George St., London, Ontario, Canada.....	1899
KEE, HUNTER, 36 9th Ave., Marlinton, W. Va.....	1920
KEESLER, RAY L., Box 15, Forestville, Butler Co., Pa.....	1924
KELLOGG, RALPH T., Silver City, N. M.....	1913
KELSO, DR. JOHN E. H., Edgewood, Lower Arrow Lake, B. C., Can.....	1915
KELTON, MRS. T. W., Charleston, Ark.....	1923
KENDEIGH, S. CHARLES, 136 Woodland Ave., Oberlin, Ohio.....	1923
KENNAN, RUTH R., 311 West Liberty, Medina, Ohio.....	1922
KENNEDY, DR. HARRIS, Readville, 37, Mass.....	1916
*KENNEDY, HARRY H., 105 Vine St., Reno, Nev.....	1920
KENNEDY, H. N., 103 East Grand Blvd., Detroit, Mich.....	1924
KENT, DUANE E., 39 Moore Place, Rutland, Vt.....	1913
KENT, EDWARD G., 9 Highland Ave., Madison, N. J.....	1919
KENT EDWIN C., 19 Liberty St., New York, N. Y.....	1907
KEPNER, MRS. C. M., R. F. D. 2, Randallstown, Md.....	1922
KEYES, MRS. C. F., 2225 Lake of Isles Blvd., Minneapolis, Minn.....	1922
KIBBE, AUGUSTUS S., 1534 Grove St., Berkeley, Calif.....	1923
*KIDDER, NATHANIEL T., Milton, Mass.....	1906
KILGORE, WILLIAM, JR., Zool. Mus. Univ. Minn., Minneapolis, Minn.....	1906
KILGUS, J. FRANK, JR., 422 High St., Williamsport, Pa.....	1922
KING, MISS GRACE W., 73 Longwood Ave., Brookline, Mass.....	1924
KING, IRVING J., Collins Center, Erie Co., N. Y.....	1924
KING, LEROY, 27 E. 83rd St., New York, N. Y.....	1901
KIRKHAM, MRS. JAMES W., 275 Maple St., Springfield, Mass.....	1904
*KIRKHAM, STANTON D., 152 Howell St., Canandaigua, N. Y.....	1910
KIRKHAM, WM. B., 100 Mill St., Springfield, Mass.....	1922
KIRKPATRICK, HARRY C., 1166 Water St., Meadville, Pa.....	1921
KIRKWOOD, FRANK C., R. F. D. 3, Monkton, Md.....	1892
*KIRN, ALBERT J. B., R. F. D. 4, Solomon, Kan.....	1918
KITCHIN, E. A., 4014 N. 35th St., Tacoma, Wash.....	1923
KITTREDGE, JOSEPH, JR., Lake States Forest Exp. Sta., Univ. Farm, St. Paul, Minn.....	1910
KLOSEMAN, MISS J. E., Beal Hall, 20 Charlesgate W., Boston, Mass.....	1909
KLOTZ, CHAS. D., Morristown School, Morristown, N. J.....	1923
KNAEBEL, ERNEST, 3707 Morrison St., Chevy Chase, D. C.....	1906

KNAPPEN, MISS PHOEBE M., 2925 Tilden St., N. W. Washington, D. C.	1924
KNAUZ, MISS MARIE B., 1217 Trevanion Ave., Regent Sq., Pittsburgh,	
Pa.....	1924
KNICKERBOCKER, CHAS. K., 410 N. Michigan Ave., Chicago, Ill....	1922
KNOLHOFF, FERDINAND WILLIAM, Argyle Park, Babylon, L. I., N. Y....	1890
KOBBE, FREDERICK W., 103 E. 86th St., New York, N. Y.....	1921
KOPMAN, HENRY H., 1329 Webster St., New Orleans, La.....	1921
KRETZMANN, DR. P. E., 3705 Texas Ave., St. Louis, Mo.....	1913
KUBICHEK, W. F., Coe College, Cedar Rapids, Iowa.....	1919
KUSER, ANTHONY R., Bernardsville, N. J.....	1908
KUSER, MRS. ANTHONY R., Bernardsville, N. J.....	1910
KUSER, JOHN DRYDEN, Bernardsville, N. J.....	1910
KUTCHIN, DR. VICTOR, Green Lake, Wis.....	1922
LABARTHE, JULES, 2727 Russell St., Berkeley, Calif.....	1920
LA DOW, STANLEY V., 65 W. 9th St., New York, N. Y.....	1913
LA FRANCHISE, MISS MARY L. Y., 31 Sherbrooke Ave., Hull, Quebec,	
Canada.....	1921
LAIMBEER, RICHARD H., Room 707, 305 Broadway, N. Y.....	1924
LAING, HAMILTON M., Comox, British Columbia, Canada.....	1917
LAMB, CHAS. R., 8 Highland St., Cambridge, Mass.....	1912
LANCASHIRE, MRS. JAMES HENRY, 11 East 69th St., New York, N. Y....	1909
LANG, HARRY M., 933 Liberty Ave., Pittsburgh, Pa.....	1924
LANG, HERBERT, Amer. Mus. Nat. Hist., New York, N. Y.....	1907
LANGDON, ROY M., 130 Lyon St., Fort Collins, Colo.....	1918
LANGELIER, GUS. A., Cap Rouge, Quebec, Canada.....	1923
LANGSTROTH, JAMES H., "Bin D," Silver City, Mexico.....	1924
LANO, ALBERT, 120 N. Block St., Fayetteville, Ark.....	(1889)1919
LARRABEE, PROF. AUSTIN P., Yankton College, Yankton, S. Dak....	1918
LASTRETO, C. B., 260 California St., San Francisco, Calif.....	1919
LATHAM, ROY, Orient, L. I., N. Y.....	1916
LAUGHLIN, J. A., 318 E. Gordon St., Marshall, Mo.....	1919
LAURENT, PHILIP, 31 E. Mt. Airy Ave., Philadelphia, Pa.....	1902
LAWRENCE, A. G., City Health Dept., Winnipeg, Man., Can.....	1920
LAWRENCE, ROBERT B., 411 Westmoreland Ave., Houston, Texas...	
(1883)1923	
LAWSON, RALPH, 88 Washington Sq. East, Salem, Mass.....	1917
LAZEAR, J. M., 922 S. Negley Ave., Pittsburgh, Pa.....	1922
LEACH, FRANK A., Diablo, Calif.....	1921
LEARNED, MISS AGNES M., Wilkins St., Hudson, Mass.....	1920
LEE, MRS. L. W., El Cajon, San Diego Co., Calif.....	1920
LEFFINGWELL, DANA J., Aurora-on-Cayuga, N. Y.....	1919
LEISTER, CLAUDE W., 50 Lake St., Saranac Lake, N. Y.....	1916
LERMOND, N. W., Thomaston, Me.....	1921
*LEVEY, MRS. WILLIAM M., 58 Davis Ave., Brookline, Mass.....	1915
LEVIN, BENJAMN SZOLD, 2104 Chelsea Terrace, Walbrook, Baltimore,	
Md.....	1922

LEWIS, GEORGE P., 4559 Forrestville Ave., Chicago, Ill.	1920
LEWIS, HARRISON F., Can. Nat. Parks, Ottawa, Canada.	1912
LEWIS, MRS. HERMAN E., 180 Grove St., Haverhill, Mass.	1912
LEWIS, JOHN B., Box 167, Lawrenceville, Va.	1924
LEWIS, M. G., County Agent, Lexington, Va.	1924
LEWY, DR. ALFRED, 2051 E. 72d Place, Chicago, Ill.	1922
L'HOMMEDIEU, J. F., Gen. Sec'y, Y. M. C. A., Thomasville, Ga.	1924
LIBBEY, ROBERT M., 520 New York Ave., N. W., Washington, D. C. .	1920
LIGON, J. STOKLEY, Box 131, Albuquerque, New Mexico.	1912
LILLIENTHAL, JOS. L., JR., 21 West 68th St., New York, N. Y.	1924
LINCOLN, DR. ARTHUR T., Dennysville, Maine.	1923
LINGS, GEO. H., The Grange, Cheadle, Cheshire, England.	1913
LINK, HENRY A., P. O. Box 76, Waterloo, Ind.	1920
LINSDALE, JEAN M., 1827 Barker Ave., Lawrence, Kansas.	1922
LITTLE, MRS. EFFIE G., R. F. D. 1, Lowell, Indiana.	1922
LITTLE, LESLIE T., Waltham Public Library, Waltham, Mass.	1922
LITTLE, LUTHER, 1403 Garfield Ave., S. Pasadena, Calif.	1913
LLOYD, HOYES, 406 Queen St., Ottawa, Canada.	1916
LOBDELL, PROF. R. N., Exp. Sta., A. & M. College, Miss.	1922
LOCKE, DR. EDWIN A., 311 Beacon St., Boston, Mass.	1920
LOCKWOOD, DEAN P., 6 College Circle, Haverford, Pa.	1921
LODGE, FRED S., 423 S. Stone Ave., La Grange, Ill.	1922
LOMAX, DR. CLAUDE, Holland, Indiana.	1921
LOMBARD, MRS. HERBERT, Gorham, Maine.	1924
LONG, HARRY V., 260 Clarendon St., Boston, Mass.	1920
LONGSTREET, ROBERT JAMES, Daytona Beach, Florida.	1923
LORD, FREDERICK P., 39 College St., Hanover, N. Y.	1922
LORD, J. ANDERSON, 13 Ash St., Danvers, Mass.	1919
LORD, JAMES S., P. O. Box 126, St. Stephen, New Brunswick, Canada.	1924
LORING, J. ALDEN, Owego, N. Y.	1917
LOTHROP, DR. OLIVER A., 101 Beacon St., Boston, Mass.	1920
LOVELL, H. B., Waldoboro, Maine.	1923
LOVERIDGE, A., Mus. Comp. Zool., Cambridge, Mass.	1924
LOW, DANIEL STORY, D. U. House, Amherst College, Amherst, Mass. .	1922
LOW, ETHELBERT I., 256 Broadway, New York, N. Y.	1907
LOW, W. J., 16 Highland Ave., Montreal, Quebec, Canada.	1923
LOWNES, ALBERT E., P. O. Box 1531, Providence, R. I.	1924
LUCE, MATTHEW, Cohasset, Mass.	1920
LUM, EDWARD H., Chatham, N. J.	1904
LUNN, MISS LULU M., 724 Villa St., Racine, Wis.	1920
LUNN, MISS MARGARET A., 1496 N. High St., Columbus, Ohio.	1919
LUTZ, MISS EMELY, 4844 Kenmore Ave., Chicago, Ill.	1924
LYNCH, JOSEPH, 400 Washington St., Perth Amboy, N. J.	1920
LYON, DR. MARCUS W., JR., 214 La Porte Ave., South Bend, Ind. . .	1922
LYON, WILLIAM I., 124 Washington St., Waukegon, Ill.	1921
LYTLE, MRS. HARRY M., Library, Pa.	1924

MACCARTY, MRS. W. C., 820 Third St., S. W., Rochester, Minn.....	1922
MACCOY, CLINTON V., 1213 Beacon St., Brookline, Mass.....	1920
MACGOWAN, W. LEROY, 1029 May St., Jacksonville, Florida.....	1924
MACKAYE, JAMES, 160 Elm St., N. Cambridge, Mass.....	1921
MACLOGHLIN, MRS. F. E., 43 Inglewood Drive, Hamilton, Ont., Canada.....	1923
MACMILLAN, WM. TORBERT, 23 Pilgrim Road, Boston, Mass.....	1924
MACREYNOLDS, GEORGE, 76 E. State St., Doylestown, Pa.....	1917
MACWILLIAM, JAMES D., 33 Reynolds St., Kingston, Pa.....	1922
MACLAY, MARK W., JR., 107 E. 81st St., New York, N. Y.....	1905
MACOMBER, A. G., Grove St., Lexington, Mass.....	1923
MADDOCK, MISS EMELINE, Stoneleigh Court, Philadelphia, Pa.....	1897
MADISON, HAROLD LESTER, 2289 Grand View Ave., Cleveland Heights, Ohio.....	1912
MAGEE, M. J., 603 South St., Sault Ste. Marie, Mich.....	1919
MAHER, J. E., 323 Pacific Ave., Jersey City, N. J.....	1902
MALLEIS, HARRY, Halstead, Kans.....	1924
MANN, MRS. WM. M., 517 Bellaire Ave., Pittsburgh, Pa.....	1924
MARBLE, RICHARD M., Woodstock, Vt.....	1907
MARBURGER, CLIFFORD, Denver, Pa.....	1923
MARCOTTE, REV. LEON, St. Charles Seminary, Sherbrooke, Quebec, Canada.....	1921
MARDEN, AARON, Eagle Id., South Harpswell, Maine.....	1924
MARKS, EDWARD SIDNEY, 655 Kearney Ave., Arlington, N. J.....	1915
MARRS, MRS. KINGSMILL, 9 Commonwealth Ave., Boston, Mass.....	1903
MARSH, R. K., 1660 Holly St., Denver, Colo.....	1922
MARSHALL, ALFRED, Montrose, Baldwin Co., Ala.....	1916
*MARSHALL, MRS. ELLA M. O., New Salem, Mass.....	1912
MARTIN, FRED I., Rt. 1, Box 58, Manchester, N. H.....	1921
MATHEWS, F. SCHUYLER, 17 Frost St., Cambridge, Mass.....	1917
MATHEWS, FRANK P., 49 West 52d St., New York, N. Y.....	1923
MATHIESON, OLAF, 285 Saint John's Place, Brooklyn, N. Y.....	1922
MATLACK, BENNETT K., Bridgeton, N. J.....	1924
MAY, FRANKLIN H., 730 Livingston Ave., Syracuse, N. Y.....	1920
MAY, DR. JOHN B., Cohasset, Mass.....	1922
MAYFIELD, DR. GEORGE R., Kissam Hall, Nashville, Tenn.....	1917
MAYNARD, CHAS. J., 457 Crafts St., W. Newton, Mass.....	1921
MAYNARD, DR. HERBERT E., 464 Commonwealth Ave., Boston, Mass.....	1921
MCCABE, T. T., Barkerville, B. C., Can.....	1920
MCCALL, W. W., Haverford, Pa.....	1921
MCCANN, HORACE D., Valley Road, Paoli, Pa.....	1923
MCCCLINTOCK, NORMAN, 504 Amberson Ave., Pittsburgh, Pa.....	1900
MCCOOK, PHILIP J., 413 E. 57th St., New York, N. Y.....	1895
MCCRACKEN, CHAS. H., 604 Hamilton Road, Thornburg, Pitts- burgh, Pa.....	1924
MCCREA, WM. S., 721 Rush St., Chicago, Ill.....	1922

McCrimmon, A. R., Montrose, Colorado.....	1924
McDaniel, Geo. H., 234 W. Pratt St., Eureka, Calif.	1923
McGraw, Harry A., 1805 15th Ave., Altoona, Pa.....	1917
McIlhenny, Edward Avery, Avery Island, La.....	1894
McKeough, Dr. Geo. T., Rt. 1, Erie Manor, Blenheim, Ontario, Canada	1921
McKim, Louis T., Melville, Saskatchewan, Canada.....	1924
McLain, Robert Baird, Room 119, McLain Bldg., Wheeling, W. Va..	1893
McLellan, Miss Mary E., 87 7th Ave., Apt. 3, San Francisco, Calif. .	1920
McLennan, James P., Route 4, Marigold Lodge, Holland, Mich.....	1924
McMillan, Mrs. Gilbert N., Delafield Ave., Riverdale on Hudson, New York, N. Y.	1902
McMullen, T. E., 933 N. 5th St., Camden, N. J.....	1920
McNeil, Dr. Chas. A., 111½ West 4th St., Sedalia, Mo.....	1919
McNeil, George M., 195 Lincoln St., Winthrop, Mass.....	1920
McVicker, Miss Elizabeth H., c/o Mrs. Nelson Fell, Warrenton, Va.	1923
Mead, Mrs. E. M., 234 Central Park West, New York, N. Y.....	1904
Mead, Lyle G., 807 N. Pine Ave., Chicago, Ill.....	1921
Medsger, Oliver P., 9 Columbia Ave., Arlington, N. J.....	1919
Megrew, Alden F., 265 Clarendon St., Boston, Mass.....	1923
Mellen, Dr. Eleanor, 291 Lake Ave., Newton Highlands, Mass.....	1920
Mengel, G. Henry, 739 Madison Ave., Reading, Pa.....	1913
Menninger, Dr. Wm. C., Bellevue Hospital, New York, N. Y.....	1919
Mercur, J. Watts, Jr., Wallingford, Pa.....	1920
Merriam, Dr. Henry F., 165 Orange Heights Ave., W. Orange, N. J..	1905
Merrill, Mrs. C. H. S., Hinckley Road, Milton, Mass.....	1924
Merrill, D. E., 5th and Sycamore Sts., Rogers, Ark.....	1913
**Merrill, Harry, 316 State St., Bangor, Maine.....	1883
Merriman, R. Owen, 96 W. 2nd St., Hamilton, Ont.....	1920
*Mershon, W. B., Saginaw, Mich.....	1905
Messer, Don V., Huntington, Mass.....	1924
Metcalf, Dr. Z. P., State College Station, Raleigh, N. C.....	1913
Meyer, Major G. Ralph, C. A. C., c/o Adjutant General, U. S. A., Washington, D. C.....	1913
*Meyer, Miss Heloise, Lenox, Mass.....	1913
Middleton, R. J., Jeffersonville, Pa.....	1920
Miller, Miss Bertha S., Capstone Farm, R. 3, Kingston, N. Y.....	1915
Miller, Mrs. H. C., 1110 Main St., Racine, Wis.....	1922
Miller, Miss Julia, Rt. 3, Hornell, Steuben Co., N. Y.....	1921
Miller, Mrs. Lena S., 630 Glynn Court, Detroit, Mich.....	1924
Miller, Miss Mary Mann, 5928 Hayes Ave., Los Angeles, Calif.....	1921
Miller, Milo H., 420 Jucunda St., Mt. Oliver, Pittsburgh, Pa.....	1924
Mills, Wier R., Pierson, Iowa.....	1920
Miner, Leo D., 1836 Vernon St., N. W., Washington, D. C.....	1913
Mitchell, Miss Catharine Adams, 144 Fairbank Road, River- side, Ill.....	1911

MITCHELL, H. HEDLEY, Provincial Mus., Regina, Saskatchewan, Can.	1918
MITCHELL, DR. WAITON I., Paonia, Delta Co., Colo.	1893
MIXER, E. M., 413 Fruit Ave., Farrell, Pa.	1924
MOFFETT, MISS CAROLINE T., C. W. Henry School, Germantown, Philadelphia, Pa.	1923
MOHR, CARL OTTO, 1208 Raymond Ave., St. Paul, Minn.	1922
MONK, H. C., Avoca Apts., Nashville, Tenn.	1921
MOODY, A. J., c/o Aetna Life Ins. Co., Hartford, Conn.	1918
MOORE, ARTHUR D., 712 Phoenix St., South Haven, Mich.	1922
MOORE, ELIZABETH P., 26 Lime St., Boston, Mass.	1923
MORCOM, G. FREAN, 243 North Coronado St., Los Angeles, Calif.	1886
MORE, R. L., 205 W. Wilbarger St., Vernon, Texas.	1921
MOREY, MRS. LILLIAN DAME, 425 Raymond St., Chevy Chase, Md.	1924
MORGAN, BRENT M., 224 11th St., S. W., Washington, D. C.	1919
MORGAN, MRS. ELEANOR L., Hotel Sherwood, Baltimore, Md.	1922
MORLEY, ARTHUR, 26 Minerva St., Swampscott, Mass.	1922
MORRELL, ARCH HIRAM, 210 Maine Ave., Gardiner, Maine.	1923
MORRIS, MISS GRACE A., Box 148, Oil City, Pa.	1924
*MORRIS, DR. LEWIS R., 60 W. 58th St., New York, N. Y.	1923
MORRIS, MISS LUCY N., 238 Claremont Ave., Montclair, N. J.	1920
MORRIS, MISS MAUDE M., Box 148, Oil City, Pa.	1924
MORRISON, ALVA, P. O. Box 2365, Boston, Mass.	1915
MORSE, ALBERT P., Peabody Museum, Salem, Mass.	1922
MORSE, FRANK E., 162 Boylston St., Boston, Mass.	1921
MORSE, GEO W., 318 East 9th St., Tulsa, Okla.	1922
MORSE, HARRY GILMAN, Huron, Ohio.	1912
MORSE, MISS M. E., 2102 E. 100th St., Cleveland, Ohio.	1919
MOSELEY, PROF. EDWIN LINCOLN, Bowling Green, Ohio.	1918
MOSES, MRS. EDMUND Quincey, 16 Fairview Ave., Tarrytown, N. Y.	1919
MOSHER, FRANKLIN H., 17 Highland Ave., Melrose Highlands, Mass.	1905
MOULTON, HERBERT F., 12 School St., Ware, Mass.	1920
MOUSLEY, WM. HENRY, 274 Girouard Ave., Notre Dame de Grace, Montreal, Can.	1915
MUELLER, WALTER J., 580 Beverly Road, Milwaukee, Wis.	1923
MUNGER, MRS. EDITH C., Hart, Michigan.	1923
MUNRO, J. A., 1060 St. David St., Oak Bay, Victoria, B. C., Can.	1913
MUNRO, MRS. WALTER S., 40 N. Main St., S. Norwalk, Conn.	1920
MURIE, O. J., 219 7th Ave., S., Moorhead, Minn.	1913
MURPHY, MRS. GRACE E. B., 45 Oriole Ave., Bronxville, N. Y.	1919
MURRAY, A. LINN, 712 N. Main St., Auburn, Indiana.	1924
MURRAY, EDGAR A., 2703 Guoin St., Detroit, Mich.	1919
MURRAY, FRANK F., Box 606, Titusville, Pa.	1922
MUSSELMAN, T. E., 124 S. 24th St., Quincy, Ill.	1922
MYERS, EVERETT C., Dept. Biology, Johns Hopkins Univ., Baltimore, Md.	1924
MYERS, MRS. HARRIET W., 311 N. Ave. 66, Los Angeles, Calif.	1906

MYERS, MISS LUCY F., 64 Market St., Poughkeepsie, N. Y.....	1898
MYERS, ORD, 216th St., and 9th Ave., New York, N. Y.....	1922
NAUMBURG, WALTER W., 14 Wall St., New York, N. Y.....	1923
*NEELY, JAMES C., 135 High St., Brookline, Mass.....	1919
NEFF, JOHNSON A., Oregon Agr. College, Corvallis, Oregon.....	1919
NEILSON, JAMES A., Wheatland, Wyoming.....	1923
NEWBEGIN, EDWARD KING, 62 Sparks St., Cambridge, Mass.....	1924
NEWBERRY, W. F., 233 Broadway, New York, N. Y.....	1920
NEWCOMB, C. A., JR., Rt. 3, Pontiac, Mich.....	1920
NICE, MRS., MARGARET M., Amherst, Mass.....	1920
NICHOLS, L. NELSON, N. Y. Public Library, New York, N. Y.....	1917
NICHOLS, RODMAN A., 27 Broad St., Salem, Mass.....	1919
NICHOLSON, NEVIN G., 235 N. Nugent Ave., Ft. Lauderdale, Florida.....	1920
NIMS, MRS. LUCIUS, 17 Union St., Greenfield, Mass.....	1913
NININGER, PROF. H. H., 759 E. Euclid St., McPherson, Kan.....	1920
NOKES, DR. I. D., 1120 Marsh-Strong Bldg., Los Angeles, Calif.....	1915
NOLTE, REV. FELIX, St. Benedict's College, Atchison, Kan.....	1903
NORRIS, EDWARD, 301 W. Springfield Ave., Philadelphia, Pa.....	1916
NORRIS, J. PARKER, JR., 2122 Pine St., Philadelphia, Pa.....	1904
NORTHUP, ELIZABETH A., 103 Willis Ave., Youngstown, Ohio.....	1924
NUGENT, JAMES R., 772 Broad St., Newark, N. J.....	1920
*O'CONOR, JOHN CHRISTOPHER, 24 E. 33rd St., New York, N. Y.....	1921
OGBURN, CHARLTON, JR., 45 West 11th St., New York, N. Y.....	1924
OGDEN, DR. HENRY VINING, 141 Wisconsin St., Milwaukee, Wis.....	1897
ORDWAY, MISS ELIZABETH I., 20 Myrtle St., Winchester, Mass.....	1924
ORTEGA, JAMES L., Rt. 1, Box 37, Yountville, Calif.....	1923
OSBORN, PROF. HENRY F., Am. Mus. Nat. Hist., New York, N. Y.....	1919
OSBORN, MISS MARY E., 1141 Hinman Ave., Evanston, Ill.....	1922
OSBORNE, ARTHUR A., 183 Lowell St., Peabody, Mass.....	1912
OSLER, H. S., 1 Rosedale Road, Toronto, Ontario, Can.....	1920
OSWALD, W. A., 301 Wilson Ave., Notre Dame de Grace, Montreal, Canada.....	1922
OVER, WILLIAM H., 125 Harvard St., N., Vermillion, S. Dak.....	1921
*OWEN, MISS JULIETTE AMELIA, 306 N. 9th St., St. Joseph, Mo.....	1897
PACKARD, WINTHROP, 1442 Washington St., Canton, Mass.....	1917
PAGAN, FRANK, Central Ave., Wellsboro, Pa.....	1923
PAINE, AUGUSTUS G., JR., 31 E. 69th St., New York, N. Y.....	1886
PAINE, CHARLES JACKSON, Room 1400, 11 Beacon St., Boston, Mass.....	1917
PAINE, JOHN B., Weston, Mass.....	1922
PAINTER, DAVID S., 840 Milwaukee St., Denver, Colo.....	1923
PAINTER, KENYON V., 3240 Fairmount Blvd., Cleveland, Ohio.....	1920
*PALMER, MISS E. D., 1741 S. Harvard Blvd., Los Angeles, Calif.....	1918
PALMER, R. H., Instituto Geologico, City of Mexico, D. F., Mexico.....	1916
PALMER, DR. SAMUEL C., Swarthmore College, Swarthmore, Pa.....	1899
PALMER, MRS. T. S., 1939 Biltmore St., N. W., Washington, D. C.....	1918
PANGBURN, CLIFFORD H., Chappaqua, Westchester Co., N. Y.....	1907

*PARKER, EDWARD LUDLOW, Nashawtue Road, Concord, Mass.....	1916
PARKER, MRS. G. B., 506 Berger Bldg., Pittsburgh, Pa.....	1924
PARKER, HERBERT, S. Lancaster, Mass.....	1920
PARMENTER, HENRY E., 317 East Valerio St., Santa Barbara, Calif....	1924
PARSONS, LEAVITT C., 70 State St., Boston, Mass.....	1924
PATCH, DR. EDITH M., College Road, Orono, Me.....	1921
PATTEN, DR. STEPHEN K., 141 Milk St., Boston, Mass.....	1920
PAUL, LUCIUS H., 436 Carter St., Rochester, N. Y.....	1908
PAULSON, MARTIN C., R. F. D. 5, Nevada, Iowa.....	1922
PEABODY, REV. P. B., 420 Blvd. N., Apt. 4, Atlanta, Ga.....	1903
PEASE, MISS FLORENCE M., Box 265, Conway, Mass.....	1922
PELLEW, MISS, M. J., Box 445, Aiken, S. C.....	1919
PEMBER, KARL A., Woodstock, Vt.....	1921
PEMBERTON, JOHN ROY, 1933 North Vista del Mar Ave., Hollywood, Calif.....	1918
PEPPER, DR. WM., Melrose Park, Philadelphia, Pa.....	1911
PERCIVAL, MRS. D. C., 306 Commonwealth Ave., Boston, Mass.....	1921
PERINE, KEBLE B., 2218 Bancroft Way, Berkeley, Calif.....	1917
PERKINS, DR. ANNE E., Gowanda Hospital, Helmuth, N. Y.....	1917
PERKINS, DR. EDW. H., Box 52, Waterville, Me.....	1920
PERKINS, DR. GEO. H., Univ. of Vt., Burlington, Vt.....	1912
PERKINS, IRVING J., Rt. 5, Box 67, Oconomowoc, Wis.....	1923
PERKINS, MISS MARY K., 631 W. Elm St., Lima, Ohio.....	1923
PERKINS, SAMUEL E., 3rd, 701 City Trust Bldg., Indianapolis, Indiana.	1923
PERKINS, MRS. W. L., 1603 Garland St., Flint, Mich.....	1922
PERRY, GEO. L., 68 Thurston St., Winter Hill, Somerville, Mass.....	1923
PERRY, DR. Henry Joseph, 19 Bay State Road, Boston, Mass.....	1909
PERRY, J. ELMER, 627 West 3rd St., Erie, Pa.....	1924
PETER, JULIUS C., Detroit Trust Co., Detroit, Mich.....	1921
PETERS, ALBERT S., Donnybrook, N. Dakota.....	1908
PETERS, HAROLD S., 363 West 9th Ave., Columbus, Ohio.....	1924
PETERS, JOS. G., JR. Box 22, North Truro, Mass.....	1921
PETERSON, ALFRED, Box 211, Pipestone, Minn.....	1920
PETTIT, HORACE, 28 Campbell Hall, Princeton, N. J.....	1923
PETTY, ORVILLE A., Chapel St. & Sherman Ave., New Haven, Conn..	1919
PETTON, LAWRENCE G., Fillmore, Ventura Co., Calif.....	1924
PHELPS, FRANK M., 212 E. 4th St., Elyria, Ohio.....	1912
PHELPS, MRS. J. W., Box 158, Northfield, Mass.....	1899
*PHILIPP, PHILIP B., 220 Broadway, New York, N. Y.....	1907
PHILLIPS, ALEXANDER H., 54 Hodge Road, Princeton, N. J.....	1891
PHILLIPS, CHAS. LINCOLN, 5 West Weir St., Taunton, Mass.....	1912
*PHILLIPS, JOHN M., 2227 Jane St., Pittsburgh, Pa.....	1920
PICKWELL, GAYLE B., Northwestern Univ., Evanston, Ill.....	1924
PIERCE, FRANKLIN K., Hotel Vendome, Boston, Mass.....	1922
PIERCE, FRED J., 1133 Bertch Ave., Waterloo, Iowa.....	1922
PIERCE, WRIGHT McEWEN, Box 343, Claremont, Calif.....	1918

PILSBURY, FRANK O., 1088 Main St., Walpole, Mass.....	1917
*PINCHOT, HON. GIFFORD, Executive Mansion, Harrisburg, Pa.....	1910
PINDAR, DR. L. OTLEY, Versailles, Kentucky.....	1922
PIRNIE, MILES D., McGraw Hall, Ithaca, N. Y.....	1919
PLATT, HON. EDMUND, 2339 Ashmead Pl., N. W., Washington, D. C....	1917
POE, MISS MARGARETTA, Earl Court, St. Paul & Preston Sts., Baltimore, Md.....	1899
POMEROY, F. E., 342 College St., Lewiston, Me.....	1920
POPE, E. F., 313½ West Central Ave., Albuquerque, N. Mex.....	1920
POOLE, EARL L., Public Museum, Reading, Pa.....	1916
PORTER, EDGAR F., R. F. D. 2, Athol, Mass.....	1922
PORTER, ELIOT F., 1085 Sheridan Road, Hubbard Woods, Ill.....	1924
PORTER, LOUIS H., Noroton Hill, Stamford, Conn.....	1893
PORTER, WILLARD B., 5 Lee St., Salem, Mass.....	1922
POST, WILLIAM S., 101 Park Ave., New York, N. Y.....	1911
POTTER, JESSICA A., 1118 Santee St., Los Angeles, Calif.....	1924
POTTER, JULIAN K., 437 Park Ave., Collingswood, N. J.....	1912
POTTER, LAWRENCE B., Gower Ranch, East End, Saskatchewan, Can..	1919
POTTER, L. HENRY, R. F. D. 2, West Rutland, Vt.....	1922
POTTS, F. A., Fortuna, Porto Rico.....	1922
POTTS, THOMAS C., East Erie Ave. & D St., Philadelphia, Pa.....	1923
POUGH, RICHARD H., 4 Lenox Place, St. Louis, Mo.....	1922
PRAEGER, WILLIAM E., Kalamazoo College, Kalamazoo, Mich.....	1892
PRATT, HON. GEO. D., Pratt Inst., 215 Ryerson St., Brooklyn, N. Y....	1917
PRATT, MISS HELEN S., 2451 Ridge View Ave., Eagle Rock, Los Angeles Co., Calif.....	1923
PRENTISS, REV. WM. C., Plainfield, Conn.....	1921
PRESCOTT, MRS. S. C., 249 Tappan St., Brookline 46, Mass.....	1922
PRICE, JOHN HENRY, Crown W Ranch, Knowlton, Mont.....	1906
PRICE, LIGON, Marlinton, W. Va.....	1913
PRIEST, GEO. H., 33 North Ash St., Brockton, Mass.....	1922
PRILL, DR. A. G., Scio, Oregon.....	1921
PRITCHARD, MRS. F. A., 203 N. Court St., Medina, Ohio.....	1918
PROCTOR, GEORGE N., 35 Congress St., Boston, Mass.....	1919
PURDIE, MISS EVELYN, 49 Ware Hall, 383 Harvard St., Cambridge, Mass.....	1921
PURDY, JAMES B., R. F. D. 1, Plymouth, Mich.....	1893
PURDY, WILLIAM B., Milford, Oakland Co., Mich.....	1921
QUARLES, EMMET AUGUSTUS, 139 E. 7th St., Plainfield, N. J.....	1918
QUATTLEBAUM, REV. W. D., 191 Prospect St., East Orange, N. J.....	1924
QUILLIN, ROY W., 1025 Summit Ave., San Antonio, Tex.....	1920
QUINCY, JOSIAH H., 37 Stratford St., Boston 32, Mass.....	1922
RACEY, KENNETH, 3262 First Ave., W., Vancouver, B. C., Can.....	1921
RAINWATER, MISS HARRIETT C., 582 W. Peachtree St., Atlanta, Ga....	1923
RAND, FRANK L., 1106 Arcade Bldg., St. Louis, Mo.....	1922
RANDOLPH, EDW. L., 1829 Lampson Road, Cleveland, Ohio.....	1924

RANKIN, DR. GEORGE SAMUEL, Longford, St. George's, Bermuda.....	1922
RAPP, F. W., Vicksburg, Mich.....	1922
RATLIFF, HON. WALTER S., R. R. B., Box 276, Richmond, Ind.....	1918
REA, DR. PAUL M., 2717 Euclid Ave., Cleveland, Ohio.....	1912
REAGH, DR. ARTHUR LINCOLN, 39 Maple St., West Roxbury, Mass....	1896
REDICK, LEONARD L., Newington Center, Conn.....	1924
REED, MRS. C. I., 5216 Greenwood Ave., Chicago, Ill.....	1920
REED, MISS CLARA EVERETT, Brookfield, Mass.....	1919
REED, MONTAGUE, 6012 Park Ave., Apt. 11, Montreal, Canada.....	1921
REESE, MRS. ROBERT M., 517 Cameron St., Alexandria, Va.....	1920
REGAR, H. SEVERN, 1400 De Kalb St., Norristown, Pa.....	1916
REGAR, G. BERTRAM, 434 Vernon Road, Noble Vista, Jenkintown, Pa..	1923
REHN, JAMES A. G., Acad. Nat. Sciences, Logan Sq., Philadelphia, Pa..	1901
REID, MRS. BRUCE, Gulf Refinery, Port Arthur, Tex.....	1918
REID, RUSSELL, 210 Thayer St., Bismarck, N. Dak.....	1919
REIS, JACOB A., JR., Edea, Cameroon, W. Africa.....	1921
REITER, O. C., 2424 Penn Ave., Pittsburgh, Pa.....	1924
RETT, EGDMONT Z., Mus. Nat. Hist., Santa Barbara, Calif.....	1917
RHOADS, CHARLES J., 1914 S. Rittenhouse Sq., Philadelphia, Pa.....	1895
RICE, JAMES HENRY, JR., Brick House Plantation, Wiggins, S. C.....	1910
RICE, WARD J., Roachdale, Ind.....	1913
RICH, MISS NELLIE V., 55 Carmel St., New Haven, Conn.....	1923
RICH, WALDO L., Box 221, Saratoga Springs, N. Y.....	1921
RICHARDS, MISS HARRIET E., 36 Longwood Ave., Brookline, Mass....	1900
RICHARDS, MISS RUTH, Clifton Sta., Fairfax Co., Va.....	1921
RICHARDSON, FREDERICK L. W., JR., Charles River, Mass.....	1921
RICHARDSON, JENNESS, 305 Walnut St., S. E., Minneapolis, Minn....	1920
RICHARDSON, RUSSELL, JR., Newtown, Bucks Co., Pa.....	1924
RICHARDSON, W. D., 4215 Prairie Ave., Chicago, Ill.....	1917
RICHARDSON, DR. WYMAN, 382 Hammond St., Chestnut Hill, Mass....	1920
RIDDICK, GEO. M., Box 1168, Houston, Tex.....	1922
RIDGWAY, JOHN L., Mus. Hist., Sci. and Art, Los Angeles, Calif.....	1890
RIIS, PAUL B., 301 Shaw St., Rockford, Ill.....	1920
RIKER, CLARENCE B., 432 Scotland Road, South Orange, N. J.....	1885
RISHEL, JOHN B., 3600 Clay St., Denver, Colo.....	1922
ROBB, WALLACE H., 371 Aqueduct St., Montreal, Quebec, Canada....	1921
ROBBINS, CHARLES A., Onset, Mass.....	1914
ROBBINS, REGINALD C., Northeast Harbor, Maine.....	1921
ROBBINS, MRS. REGINALD C., Northeast Harbor, Maine.....	1921
ROBERTS, H. RADCLIFFE, Villa Nova, Pa.....	1924
ROBERTS, WILLIAM ELY, 207 McKinley Ave., Lansdowne, Pa.....	1902
ROBERTS, WM. F., 1514 H St., N. W., Washington, D. C.....	1924
ROBERTSON, PROF. A. D., Univ. of Western Ontario, London, Ontario, Canada.....	1922
ROBERTSON, HOWARD, 157 S. Wilton Drive, Los Angeles, Calif.....	1911
ROBERTSON, JOHN MCB., Box 121, Buena Park, Orange Co., Calif.....	1920

ROBINSON, ANTHONY W., P. O. Box 426, Haverford, Pa.	1903
ROBINSON, FRANCIS B., Route 9, Owasco Road, Auburn, N. Y.	1923
ROBINSON, PROF. J. M., Box 264, Auburn, Ala.	1922
ROBINSON, MRS. L. K., 1130 S. Franklin St., Denver, Colo.	1919
ROBINSON, MISS MARY L., Central High School, Kansas City, Mo.	1919
ROBINSON, SAMUEL, Portland, Conn.	1924
ROBSON, ERNEST R., Toulon, Ill.	1923
ROGERS, MISS MABEL F., 11 Fourth Ave., Ottawa, Ontario, Canada.	1921
ROGERS, REV. WALLACE, 639 Peachtree St., Apt. A-5, Atlanta, Ga.	1921
ROLLINS, HARRY L., Wellesley, Mass.	1924
ROLSTON, HORACE W., 1534 South 55th St., Philadelphia, Pa.	1924
ROOSEVELT, FRANKLIN DELANO, Hyde Park, N. Y.	1896
ROSE, GEORGE C., 62 Chestnut St., Albany, N. Y.	1920
ROSEN, VICTOR HUGO, 40 West 69th St., New York, N. Y.	1924
ROSS, GEO. H., 23 West St., Rutland, Vt.	1904
ROSS, DR. LUCRETIVS H., 507 Main St., Bennington, Vt.	1912
ROSS, REUBEN J., Port Washington, Long Id., N. Y.	1922
ROTNOUR, A. B., 707 Hazel Ave., Ellwood City, Pa.	1921
ROUSH, GEO. HAROLD, 433 Beverly Ave., Morgantown, W. Va.	1919
ROWAN, PROF. WILLIAM, Univ. of Alberta, Edmonton, Alta., Can.	1920
RUGG, HAROLD GODDARD, Dartmouth College, Hanover, N. H.	1919
RUSSELL, JOHN W., 84 Joslin St. Providence, R. I.	1922
RUST, HENRY J., Coeur d'Alene, Idaho.	1918
SAGE, HENRY M., Menands Road, Albany, N. Y.	1885
SAGE, MRS. MARY SEARL, 1974 Broadway, New York, N. Y.	1919
SALYER, J. CLARK, 2412 Main St., Lexington, Mo.	1919
SAMPSON, W. B., 1005 N. San Joaquin St., Stockton, Calif.	1922
SANBORN, COLIN C., Field Museum, Chicago, Ill.	1911
*SANFORD, DR. LEONARD C., 216 Crown St., New Haven, Conn.	1919
SANTENS, REMI H., Carnegie Museum, Pittsburgh, Pa.	1918
SASS, HERBERT R., 23 Legare St., Charleston, S. C.	1923
SATTERTHWAIT, MRS. A. F., 118 Waverly Place, Webster Groves, Mo.	1920
SAUNDERS, FREDERICK A., Jefferson Laboratory, Cambridge 38, Mass.	1923
SAVAGE, JAMES, 1048 Ellicott Sq., Buffalo, N. Y.	1895
SAVAGE, S. O., Parkdale, Ashley Co., Arkansas.	1922
SAVARY, WALTER B., Wareham, Mass.	1922
SAVIN, WILLIAM M., 52 Broadway, New York, N. Y.	1921
SAWYER, C. J., 22 Lincoln St., Hudson, Mass.	1920
SAWYER, EDMUND JOSEPH, Yellowstone Park, Wyo.	1922
SCHAEFER, OSCAR FREDERICK, 669 Genesee St., Rochester, N. Y.	1916
SCHAFER, J. J., Port Byron, Ill.	1918
SCHANTZ, AUSTIN T., 536 Lake Shore Drive, Chicago, Ill.	1923
SCHANTZ, ORPHEUS M., 1649 Otis Bld'g, Chicago, Ill.	1919
SHEAR, PROF. E. W. E., 107 W. Park St., Westerville, Ohio.	1922
SHELL, JOHN W., Drexel Bldg., Philadelphia, Pa.	1923
SCHNEIDER, MRS. G. H., 4618 Kingswell Ave., Los Angeles, Calif.	1921

SCHOENLING, DR. EDWARD H., Harrison, Hamilton Co., Ohio.....	1923
SCHONNEGEL, JULIAN ELIOT, 92 Morningside Ave., New York, N. Y.....	1918
SCHORGER, A. W., 2021 Kendall Ave., Madison, Wis.....	1913
SCHRENCK, DR. HERMANN VON, Tower Grove and Flad Aves., St. Louis, Mo.....	1919
SCHROEDER, MRS. ADELE PARROTT, White River, Mellette Co., S. Dak.....	1920
SCOTT, MISS JANET DOWNING, 2520 Sheridan Road, Evanston, Ill.....	1921
SCOVILLE, SAMUEL, JR., 415 Lancaster Ave., Haverford, Pa.....	1916
SEARS, MISS ANNIE L., 85 Mt. Vernon St., Boston, Mass.....	1924
SEARS, MRS. GEO. G., 426 Beacon St., Boston, Mass.....	1922
SEELEY, GEORGE H., Box 106, Stockbridge, Mass.....	1920
SEFTON, J. W., JR., Maryland Bldg., San Diego, Calif.....	1922
SEMPLE, JOHN B., Sewickley, Pa.....	1924
SERRILL, WILLIAM J., Haverford, Pa.....	1916
SHARP, ARTHUR R., 99 Chauncey St., Boston, Mass.....	1921
SHAVER, PROF. JESSE M., Zool. Bldg., Univ. of Chicago, Chicago, Ill.....	1924
SHAW, HENRY S., 78 Cypress St., Newton Center, Mass.....	1916
SHAW, T. H., Dept. of Biology, Southeastern Univ., Nanking, China.....	1922
SHAW, PROF. WILLIAM T., 66 College Sta., Pullman, Wash.....	1908
SHEA, PROF. DANIEL W., Catholic Univ. of Amer., Washington, D. C.....	1917
SHEAK, WILLIAM H., 154 N. 21st St., Philadelphia, Pa.....	1921
SHEARER, DR. AMON R., Mont Belvieu, Chambers Co., Texas.....	1905
SHELDON, CHARLES, 1830 Phelps Place N. W., Washington, D. C.....	1911
SHELDON, H. H., Museum Nat. Hist., Santa Barbara, Calif.....	1919
SHEPARD, JOHN F., 72 Fairmont Ave., New Haven, Conn.....	1922
SHERILL, WM. E., Haskell, Texas.....	1922
SHERWOOD, ROBERT C., 38 Vassar St., Springfield, Mass.....	1920
SHIRLING, ALBERT E., 3849 E. 62nd St., Kansas City, Mo.....	1919
SHOEMAKER, CLARENCE R., 3116 P St., Washington, D. C.....	1910
SHOEMAKER, HENRY W., McElhattan, Pa.....	1912
SHOFFNER, CHAS. P., The Farm Journal, Washington Sq., Phila- delphia, Pa.....	1915
SHUMWAY, FRANK R., 404 West Ave., Rochester, N. Y.....	1920
SILLIMAN, O. P. c/o Mitchell-Silliman Co., Salinas, Calif.....	1915
SKINNER, M. P., 44 Broadhead Ave., Jamestown, N. Y.....	1916
SLAWSON, DR. EDW. DOUGLASS, 708 N. Sheridan St., Bay City, Mich.....	1921
SLEEPER, LAURENCE, 198 St. Paul St., Brookline, Mass.....	1920
SLOANAKER, PROF. J. L., 907 W. Mansfield Ave., Spokane, Wash.....	1923
SMALL, MAJOR WM. M., U. S. Marine Corps, Quantico, Va.....	1924
SMITH, AUSTIN PAUL, Apt. 412, San Jose, Costa Rica.....	1911
SMITH, EARL R., P. O. Box 641, New Orleans, La.....	1924
SMITH, MISS ETHEL M., 57 Pleasant St., Amherst, Mass.....	1924
SMITH, MRS. FLORENCE, Box 145, Cincinnati, N. Y.....	1920
SMITH, PROF. FRANK, 1005 West California Ave., Urbana, Ill.....	1909
SMITH, HERBERT A., 550 Lee Ave., Webster Groves, Mo.....	1922

SMITH, HORACE G., 2918 Lafayette St., Denver, Colo.....	1888
SMITH, HOWARD C., West Stafford, Conn.....	1923
SMITH, DR. HUGH M., 1209 M St., N. W., Washington, D. C.....	1886
SMITH, JESSE L., 141 S. 2nd St., Highland Park, Ill.....	1920
SMITH, LESTER W., Park Club House, Babson Park, Mass.....	1916
SMITH, MISS LOTTIE M., R. F. D. Box 6, S. Sudbury, Mass.....	1920
SMITH, NAPIER, Bank of Montreal, Verdun, P. Q., Canada.....	1915
SMITH, MRS. OLIVIA G., 350 Riverside Ave., Medford, Mass.....	1924
SMITH, O. WARREN, 112 W. Church St., Evansville, Wis.....	1924
SMITH, ROY H., 183 N. Prospect St., Kent, Ohio.....	1922
SMITH, THOMAS, 124 Howe St., Methuen, Mass.....	1920
SMITH, MRS. WALLIS C., 525 N. Mich. Ave., Saginaw, W. S., Mich.....	1916
SMITH, WENDELL PHILLIPS, Wells River, Vt.....	1919
SMITH, WILLIAM, Box 173, Castle Shannon, Pa.....	1924
SMYTH, PROF. ELLISON A., JR., Polytechnic Inst., Blacksburg, Va.....	1892
SMYTH, PROF. THOMAS, Blacksburg, Va.....	1921
SNOW, MISS GRACE M., 39 Forest St., Winchester, Mass.....	1922
SNYDER, MISS DOROTHY E., 133 Columbus St., Elyria, Ohio.....	1923
SNYDER, LAWRENCE H., Dept. of Zool., State College, Raleigh, N. C.....	1923
SNYDER, LESTER L., Royal Ont. Mus., Toronto, Ont., Can.....	1919
SNYDER, WILL EDWIN, 309 DeClark St., Beaver Dam, Wis.....	1895
SOPER, MRS. ALEXANDER C., Oak Road, Santa Barbara, Calif.....	1922
SOTO, MANUEL TOUS, P. O. Box 731, San Juan, Porto Rico.....	1923
SOUTHARD, JAMES, R't 1, Madisonville, Ky.....	1923
SPACE, PETER S., 600 Bellaire Ave., Pittsburgh, Pa.....	1924
SPALDING, DR. FRED M., 326 Tappan St., Brookline, Mass.....	1922
SPAULDING, MISS NINA GERTRUDE, c/o Miss Mabelle Cutter, Jaffrey, N. H.....	1922
SPEAR, H. M., 71 Octavia St., Belleville, Ontario, Can.....	1921
SPEECHLY, DR. H. M., 232 Home St., Winnipeg, Man., Can.....	1922
SPELMAN, HENRY M., 48 Brewster St., Cambridge, Mass.....	1911
SPERRY, CHARLES C., Biological Survey, Washington, D. C.....	1920
SPIKER, CHARLES J., 1808 Cedar St., Sioux City, Iowa.....	1921
SPINGARN, EDW. D. W., Amenia, N. Y.....	1924
SPRAGUE, ISAAC, Wellesley Hills, Mass.....	1920
SPROT, G. D., R. M. D. Cobble Hill, Vancouver Island, B. C., Can.....	1923
SPRUANCE, W. C., 2507 W. 17th St., Wilmington, Delaware.....	1923
SPRUNT, ALEXANDER, JR., 92 South Bay St., Charleston, S. C.....	1923
STACY, EUGENE C., Tiffin, Ohio.....	1924
STANWOOD, MISS CORDELIA JOHNSON, Ellsworth, Me.....	1909
STEBBINS, FANNIE A., R. F. D. 2, 31 Ely Ave., W. Springfield, Mass.....	1922
STEPHENSON, MRS. JESSE, Monte Vista, Colo.....	1918
STETSON, SERENO, 511 W. 113th St., New York, N. Y.....	1923
STEWART, J. B., Roselle, N. J.....	1921
STICKNEY, GARDNER P., 864 Summit Ave., Milwaukee, Wis.....	1923
STILES, EDGAR C., 345 Main St., West Haven, Conn.....	1907

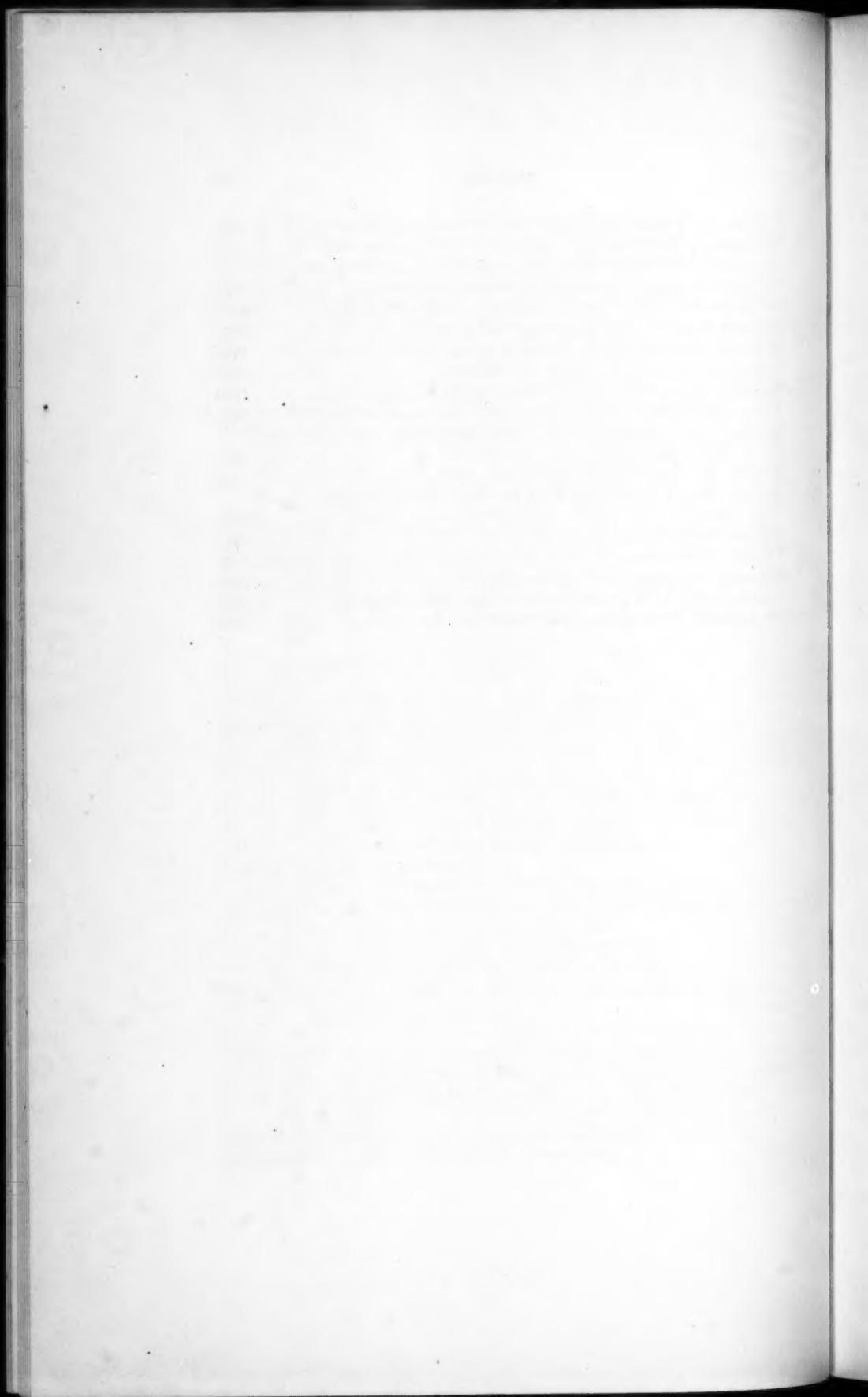
STIMSON, DR. ARTHUR M., 414 Raymond St., Chevy Chase, Md.....	1917
STIRTON, R. A., Mus. Kansas Univ., Lawrence, Kansas.....	1923
STONE, C. N., 222 Prince St., West Newton, Mass.....	1922
STONE, MRS. FRANCIS H., S. Dartmouth, Mass.....	1920
STONE, HARRY HERBERT, JR., Sturbridge, Mass.....	1919
STONE, ROBERT G., 311 Clinton Road, Brookline, Mass.....	1922
STONE, MRS. WITMER, 452 Church Lane, Germantown, Phila., Pa.....	1920
STONER, DR. DAYTON, 603 Summit St., Iowa City, Iowa.....	1922
STONER, EMERSON A., Box 444, Benicia, Calif.....	1922
STRATTON, MRS. GEORGE W., 518 Franklin Ave., Wilksburg, Pa.....	1920
STREET, J. FLETCHER, Beverly, N. J.....	1908
STREET, RAYMOND E., 66 Broadway, New York, N. Y.....	1924
STRUTHERS, REV. ALFRED L., 6 Cottage St., W. Brookfield, Mass.....	1922
*STUART, GEO. H., 3RD, 923 Clinton St., Philadelphia, Pa.....	1913
STUBBS, ARTHUR P., 14 Fiske Ave., Lynn, Mass.....	1922
STURTEVANT, EDWARD, St. George's School, Newport, R. I.....	1896
SUGDEN, ARTHUR W., 35 Concord St., West Hartford, Conn.....	1913
SULLIVAN, WALTER F., Penna. State Forest School, Mont Alto, Pa.....	1924
SUTTON, GEO. MIKSCH, State Game Com., Harrisburg, Pa.....	1919
SWAIN, JOHN MERTON, 15 Pleasant St., Farmington, Me.....	1899
SWEENEY, J. A., 507 E. Ann St., Ann Arbor, Mich.....	1916
SWEET, MISS ORA D., 45 Logan St., Auburn, N. Y.....	1919
SWOPE, DR. EUGENE, Roosevelt Bird Sanctuary, Oyster Bay, L. I., N. Y.....	1921
TABER, WM. BREWSTER, JR., Greenwood Farm, Kansas, Ill.....	1924
TALBOT, L. R., 14 Perkins St., Melrose Highlands, Mass.....	1920
TATNALL, SAMUEL A., 503 Hansberry St., Philadelphia, Pa.....	1916
TAYLOR, ALEXANDER R., Cayce, S. C.....	1907
TAYLOR, HORACE, 5 Brattle Sq., Cambridge, Mass.....	1917
TAYLOR, MRS. H. J., 2813 Channing Way, Berkeley, Calif.....	1922
TAYLOR, LIONEL E., Box 687, Kelowna, B. C., Can.....	1913
TAYLOR, DR. WALTER P., Box 402, Univ. Station, Tucson, Ariz.....	1916
TAYLOR, WARNER, 619 N. Frances St., Madison, Wis.....	1916
TEACHENOR, DIX, 437 W. 60th Terrace, Kansas City, Mo.....	1919
TEE-VAN, JOHN, 120 E. 75th St., New York, N. Y.....	1921
TERRELL, CLYDE B., 83 Monument Sq., Oshkosh, Wis.....	1920
TERRILL, LEWIS McI., 44 Stanley Ave., St. Lambert, Quebec, Can.....	1907
TERRY, DR. ROBERT J., Univ. Washington, St. Louis, Mo.....	1919
THABES, MRS. J. A., 417 Holly St., Brainerd, Minn.....	1920
THOMAS, EDWARD S., 1116 Madison Ave., Columbus, Ohio.....	1922
THOMAS, JOHN G., 1226 Hayvenhurst Drive, West Hollywood, Calif.....	1921
THOMAS, R. M., 298 Garry St., Winnipeg, Manitoba, Can.....	1922
THOMPSON, J. W., 527 East First South St., Salt Lake City, Utah.....	1916
THOMPSON, LOVELL, 161 Brattle St., Cambridge, Mass.....	1923
THOWLESS, HERBERT L., 765 Broad St., Newark, N. J.....	1919
THWING, GRACE E., George School, Bucks Co., Pa.....	1922

TILLIECH, MISS MARY A., 10 Bedford St. S. E., Minneapolis, Minn.	1922
TINDALL, CHAS. W., 912 N. Noland St., Independence, Mo.	1919
TINKER, ALMERIN D., 519 Oswego St., Ann Arbor, Mich.	1907
TIPPETTS, MRS. KATHERINE B., Belmont Hotel, St. Petersburg, Fla.	1921
TITUS, W. H., Ellsworth, Maine.	1922
TOLFREE, EDWARD R., 247 5th Ave., New York, N. Y.	1921
TOMLINSON, IRVING C., 1249 Little Bldg., Boston, Mass.	1920
TORREY, MISS EDITH E., 164 Huntington Ave., Boston, Mass.	1920
TOWER, MRS. KATE D., Hotel Bristol, Copley Square, Boston, Mass.	1908
TOWLE, WILLIAM M., Box 444, Enosbury Falls, Vt.	1921
TOWNE, DR. SOLON RODNEY, Benson Station, Route 2, Omaha, Neb.	1919
TOWNSHEND, HENRY H., 35 Hillhouse Ave., New Haven, Conn.	1915
TRAUTMAN, MILTON B., 618 S. 5th St., Columbus, Ohio.	1924
TREGANZA, A. O., 522 S. 13th East St., Salt Lake City, Utah.	1906
TRESCOT, ED. BOCQUET, Rt. 4, Box 221, Petaluma, Cal.	1924
TROTTER, WILLIAM HENRY, 36 N. Front St., Philadelphia, Pa.	1899
TRUDELL, WM. J., Box 4, Huntington, Mass.	1923
TRUE, GEO. L., JR., Troy Conference Academy, Poultney, Vt.	1922
TRUESDELL, JOHN F., 6310 Franklin Circle, Los Angeles, Calif.	1918
TRUMAN, J. B., 208 Hamilton St., Harrisburg, Pa.	1924
TRUMBELL, J. H., 39 Farmington Ave., Plainville, Conn.	1907
TUCKER, MRS. MARCIA B., 733 Park Ave., New York, N. Y.	1924
TUFTS, MISS MARY I., 1 Atlantic St., Lynn, Mass.	1922
TUFTS, ROBIE W., Wolfville, Nova Scotia, Can.	1919
TULLOCK, MRS. GILBERT, 3 Edgehill Road, New Haven, Conn.	1919
TUTTLE, MRS. F. MAY, 1114 State St., Osage, Iowa.	1920
TUTTLE, HENRY EMERSON, Groton School, Groton, Mass.	1909
TWITCHELL, A. H., Flat, Alaska.	1918
TYLER, JOHN G., Box 173, Fresno, Calif.	1912
TYLER, MRS. WINSOR M., 1 Percy Road, Lexington, Mass.	1923
TYRRELL, W. BRYANT, 1110 S. 4th Ave., Maywood, Ill.	1922
UFFORD, DR. EUGENE U., Auburndale, Mass.	1922
UHLER, FRANCIS M., 33 B St., N. W. Washington, D. C.	1924
UNDERDOWN, CHAS. ELIOT, 8216 Manor Road, Elkins Park, Pa.	1923
UNDERDOWN, HENRY T., 401 Chestnut St., Philadelphia, Pa.	1921
UNDERWOOD, KENNETH, Box 414, Montgomery, Ala.	1923
UNDERWOOD, WM. LYMAN, Mass. Inst. of Tech., Cambridge, Mass.	1900
UNGLISH, W. E., 345 N. Rosanna St., Gilroy, Calif.	1924
URNER, CHARLES A., 613 Cleveland Ave., Elizabeth, N. J.	1920
VALENTINE, MISS ANNA J., Bellefonte, Pa.	1905
*VANDERGRIFF, S. H., 311 Riggs Bldg., Washington, D. C.	1918
VAN LOON, GORDON E., 209 Tyler Ave., Highland Park, Mich.	1922
VAN NAME, WILLARD G., Am. Mus. Nat. Hist., New York, N. Y.	1900
VAN ROSSEM, ADRIAAN J., Rt. 2, Box 628, Pasadena, Calif.	1923
VAN TYNE, J., 1942 Cambridge Road, Ann Arbor, Mich.	1922
VARICK, DR. WM. REMSEN, San Marcos Bldg., Santa Barbara, Calif.	1920

VETTER, DR. CHARLES, 67 West 12th St., New York, N. Y.....	1898
VICKERS, E. W., Berlin Center, Ohio.....	1921
VIEGA, J. A., P. O. Box 488, Habana, Cuba.....	1923
VON LENDERKE, JUSTUS, 257 Highland Ave., Orange, N. J.....	1907
VORHIES, DR. CHAS. T., Univ. of Ariz., Tucson, Ariz.....	1918
VOUGHT, EARLE G., Rt. 2, Hopewood, Northumberland, Pa.....	1924
WALCOTT, CHAS. F., 77 Sparks St., Cambridge, Mass.....	1923
*WALCOTT, FREDERICK C., 17 E. 42nd St., New York, N. Y.....	1921
WALCOTT, JUDGE ROBERT, 152 Brattle St., Cambridge, Mass.....	1924
WALKER, ERNEST P., Juneau, Alaska.....	1918
WALKER, GEO. R., R. D. 3, Murray, Utah.....	1909
WALKER, ROLAND, 163 W. College St., Oberlin, Ohio.....	1924
WALLACE, CHAS. R., 69 Columbus Ave., Delaware, Ohio.....	1913
WALTER, DR. HERBERT E., 67 Oriole Ave., Providence, R. I.....	1901
WALTERS, FRANK, 144 E. 59th St., New York, N. Y.....	1902
WARD, FRANK H., 18 Grove Place, Rochester, N. Y.....	1908
WARD, DR. HENRY B., State University, Urbana, Ill.....	1922
WARD, HENRY L., Kent Scientific Museum, Grand Rapids, Mich....	1906
WARNER, EDWARD P., Mass. Institute of Technology, Cambridge, Mass.....	1910
WARREN, DR. BENJAMIN H., 220 W. Market St., West Chester, Pa....	1922
WARREN, GEO. C., 41 Middlesex Road, Chestnut Hill, Mass.....	1924
WARTHIN, ALFRED SCOTT, JR., 1020 Ferdon Rd., Ann Arbor, Mich....	1922
WATSON, C. G., 201 Ridout St., S., London, Ont., Can.....	1919
WEBER, J. A., 151 Grand Ave., Leonia, N. J.....	1907
WEBSTER, E. B., Port Angeles, Wash.....	1923
WEBSTER, DR. GEORGE A., Lawton Hall, Brattleboro, Vt.....	1916
WEBSTER, MRS. JENNIE E. B., 44 E. 23rd St., New York, N. Y....	1917
WEED, CLARENCE M., State Normal School, Lowell, Mass.....	1924
WEEKS, REV. LEROY TITUS, Emmetsburg, Iowa.....	1918
WEISEMAN, T. WALTER, 226 Beaver Road, Emsworth, Pittb'gh, Pa....	1919
WEISER, CHARLES S., 105 W. Springettsbury Ave., York, Pa.....	1916
*WELLING, YENS M., Rt. 4, Anderson, Ind.....	1924
*WELLMAN, GORDON B., 17 Midland R'd, Wellesley, Mass.....	1908
WELLS, MISS CAROLINE, 540 S. 2nd St., Missoula, Mont.....	1920
WELLS, HERBERT R., Elks Building, Rapid City, S. Dak.....	1922
WETMORE, MRS. EDMUND H., Box 497, Babylon, N. Y.....	1902
WEYGANDT, DR. CORNELIUS, 6635 Wissahickon Ave., Philadelphia, Pa....	1907
WEYL, EDWARD S., 6506 Lincoln Drive, Mt. Airy, Philadelphia, Pa....	1921
WEYMOUTH, C. G., Sigma Nu House, Brunswick, Me.....	1923
*WHARTON, WILLIAM P., Groton, Mass.....	1907
WHEELER, REV. HARRY E., 407 Exchange Bank Bldg., Little Rock, Ark.....	1923
WHEELER, MRS. JAMES W., 403 15th Ave. N., Seattle Wash.....	1918
WHITAKER, J. D., 683 Atlantic Ave., Boston, Mass.....	1924
WHITE, DONALD, 56 Jordan Ave., Wakefield, Mass.....	1920

WHITE, FRANCIS BEACH, St. Paul's School, Concord, N. H.....	1891
WHITE, GEORGE R., 185 Wurtemberg St., Ottawa, Canada.....	1903
*WHITE, GEO. WHITNEY, Nat. Metropolitan Bank, Washington, D. C.....	1924
WHITE, W. A., 158 Columbia Heights, Brooklyn, N. Y.....	1902
WHITE, W. FOSTER, 126 Liberty St., New York, N. Y.....	1923
WHITING, HARRY A., Walpole, Mass.....	1923
WHITNEY, HOWARD, 45 East St., Hartford, Conn.....	1921
WHITTLE, CHARLES L., 50 Congress St., Boston, Mass.....	1916
WHITTLE, MRS. H. G., 50 Congress St., Boston, Mass.....	1904
WICKS, MRS. JUDSON L., 1911 Pillsbury Ave., Minneapolis, Minn.....	1922
WIEGMANN, DR. WILLIAM HENRY, 436 E. 5th St., New York, N. Y.....	1916
*WIGGLESWORTH, DR. EDW., Boston, Soc. Nat. Hist., Boston, Mass.....	1920
WILBUR, ADDISON P., 60 Gibson St., Canandaigua, N. Y.....	1895
WILCOX, T. FERDINAND, 118 E. 54th St., New York, N. Y.....	1895
WILDMAN, EDWARD E., 4331 Osage Ave., Philadelphia, Pa.....	1923
WILLARD, BERTEL G., 51 Fresh Pond Parkway, Cambridge, Mass.....	1906
WILLARD, FRANK C., Farmingdale, N. Y.....	1909
WILLARD, OSCAR T., 1444 E. 54th St., Chicago, Ill.....	1919
WILLCOX, DR. M. A., 63 Oakwood Road, Newtonville 60, Mass.....	1913
WILLIAMS, ARTHUR B. JR., 2855 Scarborough Rd., Cleveland Heights, Ohio.....	1924
WILLIAMS, ELLISON A., 27 Limehouse St., Charleston, S. C.....	1923
WILLIAMS, LAIDLAW, 152 W. 57th St., New York, N. Y.....	1919
WILLIAMS, LEWIS B., 706 Citizens Bldg., Cleveland, Ohio.....	1920
WILLIAMS, ROBERT S., Botanical Gardens, New York, N. Y.....	1888
WILLIAMSON, E. B., Bluffton, Ind.....	1900
WILLIS, E. J., Riceville, Iowa.....	1923
WILLIS, WARREN J., Yale Ave., Swarthmore, Pa.....	1923
WILSON, MRS. ETTA S., 9077 Clarendon Ave., Detroit, Mich.....	1917
WILSON, DR. FRANK NOTMAN, 804 Lawrence St., Ann Arbor, Mich.....	1922
WILSON, GORDON, 1434 Chestnut St., Bowling Green, Ky.....	1919
WILSON, HAROLD C., Ephraim, Wis.....	1924
WINANT, ALBERT, 194 Maple Ave., Great Barrington, Mass.....	1922
WING, DEWITT C., 5626 Dorchester Ave., Hyde Park, Chicago, Ill.....	1913
WING, GEORGE STUART, Rt. 3, Jackson, Michigan.....	1924
WINGARD, TOD ALBERT, 1173 Say Ave., Columbus, Ohio.....	1918
WINTER, DWIGHT, Center and Negley Aves., Pittsburgh, Pa.....	1922
WISE, MISS HELEN D., 1930 18th St., N. W., Washington, D. C.....	1919
WOLFE, LIEUT. L. R., Ft. Douglas, Utah.....	1922
WOLFE, PATRICK R., 6325 South Marshfield Ave., Chicago, Ill.....	1921
WOOD, ALLEN H., JR., 178 Tremont St., Boston, Mass.....	1923
WOOD, DR. CLIFFORD H., 656 N. Vista Bonita, Glendora, Calif.....	1924
WOOD, DR. GEORGE B., N. E. Corner 20th & Chestnut Sts., Phila- delphia, Pa.....	1916
WOODRUFF, FRANK M., Acad. of Sciences, Lincoln Park, Chicago, Ill.....	1894
WOODRUFF, LEWIS B., 14 E. 68th St., New York, N. Y.....	1886

WOODS, H. EARLE, P. O. Box 216, Huntington, Mass.....	1924
WOODWARD, DR. LEMUEL F., 52 Pearl St., Worcester, Mass.....	1917
WOOLMAN, MISS ANNA, 21 N. Highland Ave., Lansdowne, Pa.....	1920
WORCESTER, MRS. ALFRED J., 314 Bacon St., Waltham, Mass.....	1908
WORTHINGTON, REV. WM. A., Annville, Jackson Co., Ky.....	1923
WRIGHT, CARL F., Mishika, Vilas Co., Wis.....	1924
WRIGHT, CHARLES M., 24 Arlington Road, Woburn, Mass.....	1924
WRIGHT, FRANK S., 14 Cayuga St., Auburn, N. Y.....	1917
WRIGHT, MISS MARY A., 55 Wave Hall, Cambridge, Mass.....	1920
WYMAN, LUTHER E., 3965 Dalton Ave., Los Angeles, Calif.....	1907
WYTHE, MISS MARGARET W., Mus. Vert. Zool., Univ. of Calif., Berkeley, Calif.....	1924
YODER, WM. JR., 4510 N. Carlisle St., Philadelphia, Pa.....	1923
YOUNG, REV. CHAS. JOHN, 1726 5th Ave., West, Vancouver, B. C., Can.....	1918
YOUNG, JOHN P., Ithaca, N. Y.....	1911
ZELENY, LAWRENCE, 613 East River Road, Minneapolis, Minn.....	1924
ZIEGLER, G. FRED, JR., Greencastle, Pa.....	1920
ZOERB, MRS. J. W., 6542 Dalzell Place, Pittsburgh, Pa.....	1924
ZÜCKERMAN, JOSEPH, Am. Mus. Nat. Hist., New York, N. Y.....	1919



DECEASED MEMBERS.

(List published at intervals of 5 years; last publication in 1920.)

FELLOWS.

ALDRICH, CHARLES.....	March 8, 1908
ALLEN, JOEL ASAPH*.....	Aug. 29, 1921
BAIRD, SPENCER FULLERTON.....	Aug. 19, 1887
BARROWS, WALTER BRADFORD.....	Feb. 26, 1923
BEAL, FOSTER ELLENBOROUGH LASCELLES.....	Oct. 1, 1916
BENDIRE, CHARLES EMIL.....	Feb. 4, 1897
BICKNELL, EUGENE PINTARD.....	Feb. 9, 1925
BREWSTER, WILLIAM*.....	July 11, 1919
COOKE, WELLS WOODBRIDGE.....	March 30, 1916
CORY, CHARLES BARNEY*.....	July 29, 1921
COVES, ELLIOTT*.....	Dec. 25, 1899
DUTCHER, WILLIAM.....	July 1, 1920
ELLIOT, DANIEL GIRAUD*.....	Dec. 22, 1915
GOSSE, NATHANIEL STICKNEY.....	March 10, 1891
HOLDER, JOSEPH BASSETT.....	Feb. 28, 1888
JEFFRIES, JOHN AMORY.....	March 26, 1892
MCILWRAITH, THOMAS.....	Jan. 31, 1903
MEARNS, EDGAR ALEXANDER.....	Nov. 1, 1916
MERRILL, JAMES CUSHING.....	Oct. 27, 1902
PALMER, WILLIAM.....	April 8, 1921
PURDIE, HENRY AUGUSTUS.....	March 29, 1911
SENNETT, GEORGE BURRITT.....	March 18, 1900
TRUMBULL, GURDON.....	Dec. 28, 1903
WHEATON, JOHN MAYNARD.....	Jan. 28, 1887

RETIRED FELLOWS.

BELDING, LYMAN.....	Nov. 22, 1917
GILL, THEODORE NICHOLAS.....	Sept. 25, 1914

HONORARY FELLOWS.

BARBOZA DU BOCAGE, JOSÉ VICENTE.....	July —, 1908
BERLEPSCH, HANS VON.....	Feb. 27, 1915
BLANFORD, WILLIAM THOMAS.....	June 23, 1905
BURMEISTER, KARL HERMANN KONRAD.....	May 1, 1891
CABANIS, JEAN LOUIS.....	Feb. 20, 1906
DRESSER, HENRY EELES.....	Nov. 28, 1915
DUBOIS, ALPHONSE JOSEPH CHARLES.....	June 1, 1921

* Former Presidents of the Union.

FINSCH, FRIEDRICH HERMANN OTTO.....	Jan. 31, 1917
FURBRINGER, MAX.....	March 6, 1920
GÄTKE, HEINRICH.....	Jan. 1, 1897
GIGLIOLI, ENRICO HILLYER.....	Dec. 16, 1909
GODMAN, FREDERICK DUCANE.....	Feb. 19, 1919
GURNEY, JOHN HENRY.....	April 20, 1890
GURNEY, JOHN HENRY, JR.....	Nov. 15, 1922
HARTLAUB, [KARL JOHANN] GUSTAV.....	Nov. 20, 1900
HARVIE-BROWN, JOHN ALEXANDER.....	July 26, 1916
HUME, ALLAN OCTAVIAN.....	July 31, 1912
HUXLEY, THOMAS HENRY.....	June 29, 1895
KRAUS, FERDINAND.....	Sept. 15, 1890
LAWRENCE, GEORGE NEWBOLD.....	Jan. 17, 1895
MEYER, ADOLF BERNHARD.....	Feb. 5, 1911
MILNE-EDWARDS, ALPHONSE.....	April 21, 1900
NEWTON, ALFRED.....	June 7, 1907
PARKER, WILLIAM KITCHEN.....	July 3, 1890
PELZELN, AUGUST VON.....	Sept. 2, 1891
SALVADORI PALEOTTI, ADELARDO TOMMASO.....	Oct. 9, 1923
SALVIN, OSBERT.....	June 1, 1898
SAUNDERS, HOWARD.....	Oct. 20, 1907
SCHLEGEL, HERMANN.....	Jan. 17, 1884
SCLATER, PHILIP LUTLEY.....	June 27, 1913
SEEBOHM, HENRY.....	Nov. 26, 1895
SHARPE, RICHARD BOWDLER.....	Dec. 25, 1909
TACZANOWSKI, LADISLAS [CASIMIROVICH].....	Jan. 17, 1890
WALLACE, ALFRED RUSSEL.....	Nov. 7, 1913

CORRESPONDING FELLOWS.

ALPHERAKY, SERGIUS NIKOLAEVICH.....	1918
ALTUM, JOHANN BERNARD THEODOR.....	Feb. 1, 1900
ANDERSON, JOHN.....	Aug. 15, 1900
BALDAMUS, AUGUSTE KARL EDUARD.....	Oct. 30, 1893
BIANCHI, VALENTIN LVOVICH.....	Jan. 10, 1920
BLAKISTON, THOMAS WRIGHT.....	Oct. 15, 1891
BLASIUS, [PAUL HEINRICH] RUDOLPH.....	Sept. 21, 1907
BLASIUS, WILHELM AUGUST HEINRICH.....	May 31, 1912
BOGDANOW, MODEST NIKOLAEVICH.....	March 16, 1888
BONHOTE, JOHN LEWIS JAMES.....	Oct. 10, 1922
BROOKS, WILLIAM EDWIN.....	Jan. 18, 1899
BRYANT, WALTER [PIERC] E.....	May 21, 1905
BULLER, WALTER LAWRY.....	July 19, 1906
BUTLER, EDWARD ARTHUR.....	April 16, 1916
CHAMBERLAIN, MONTAGUE.....	Feb. 10, 1924
CHROSTOWSKI, TADEUSZ.....	1923

CHUBB, CHARLES	June 25, 1924
COLLETT, ROBERT	Jan. 27, 1913
COOPER, JAMES GRAHAM	July 19, 1902
CORDEAUX, JOHN	Aug. 1, 1899
DAVID, ARMAND	Nov. 10, 1900
DUGÈS, ALFRED	Jan. 7, 1910
ECHT, EDUARD BACHOFEN VON	May 22, 1922
ELWES, HENRY JOHN	Nov. 26, 1922
FATIO, VICTOR	March 19, 1906
FEILDEN, HENRY WEMYSS	June 18, 1921
GIRTANNER, GEORG ALBERT	June 4, 1907
GODWIN-AUSTIN, HENRY HAVERSHAM	Dec. 2, 1923
GOELDI, EMIL AUGUST	July 5, 1917
HAAST, JOHANN FRANZ JULIUS VON	Aug. 16, 1887
HARGITT, EDWARD	March 19, 1895
HAYEK, GUSTAV EDLER VON	Jan. 9, 1911
HERMAN, OTTO	Dec. 27, 1914
HOLUB, EMIL	Feb. 21, 1902
HOMER, EUGEN FERDINAND VON	May 31, 1889
HUDSON, WILLIAM HENRY	Aug. 18, 1922
KNUDSEN, VALDEMAR	Jan. 8, 1898
KRUKENBERG, CARL FRIEDRICH WILHELM	Feb. 18, 1889
KRUPER, THEOBALD JOHANNES	March 23, 1921
LAYARD, EDGAR LEOPOLD	Jan. 1, 1900
LEGGE, WILLIAM VINCENT	March 25, 1913
LE SOUËF, WILLIAM HENRY DUDLEY	Sept. 6, 1923
LEVERKÜHN, PAUL	Dec. 5, 1905
LILFORD, LORD (THOMAS LITTLETON POWYS)	June 17, 1896
MALMGREN, ANDERS JOHAN	April 12, 1897
MARSCHALL, AUGUST FRIEDRICH	Oct. 11, 1887
MCFARLANE, RODERICK ROSS	April 14, 1920
MIDDENDORFF, ALEXANDER THEODOROVICH	Jan. 28, 1894
MOJSISOVICS VON MOJSVAR, FELIX GEORG HERMANN AUGUST	Aug. 27, 1897
NAMIYE, MOTOTOSHI	May 24, 1918
NORTH, ALFRED JOHN	May 6, 1917
OATES, EUGENE WILLIAM	Nov. 16, 1911
OGILVIE-GRANT, WILLIAM ROBERT	July 26, 1924
OUSTALET, [JEAN FRÉDÉRIC] ÉMILE	Oct. 23, 1905
PALMEN, JOHAN AXEL	April 7, 1919
PHILIPPI, RUDOLF AMANDUS	July 23, 1904
PREJEVALSKY, NICOLAS MICHAELOVICH	Nov. 1, 1888
PRENTISS, DANIEL WEBSTER	Nov. 19, 1899
PRYER, HARRY JAMES STOVIN	Feb. 17, 1888
RADDE, GUSTAV FERDINAND RICHARD VON	March 15, 1903
RAMSAY, EDWARD PIERSON	Dec. 16, 1916
SCHRENCK, LEOPOLD VON	Jan. 20, 1894

SÉLYS-LONGCHAMPS, MICHEL EDMOND DE.....	Dec. 11, 1900
SEVERTZOW, NICOLAS ALEKSYEVICH.....	Feb. 8, 1885
SHELLEY, GEORGE ERNEST.....	Nov. 29, 1910
SIMON, EUGÈNE LOUIS.....	1925
STEVENSON, HENRY.....	Aug. 18, 1888
TRISTRAM, HENRY BAKER.....	March 8, 1906
TSCHUBI ZU SCHMIDHOFFEN, VICTOR VON.....	March 5, 1924
WATERHOUSE, FREDERICK HERSCHEL.....	March 12, 1919
WHARTON, HENRY THORNTON.....	Sept. —, 1895
WINGE, ADOLF HERLUF.....	Nov. 10, 1923
WOODHOUSE, SAMUEL WASHINGTON.....	Oct. 23, 1904
WOBCESTER, DEAN CONANT.....	May 2, 1924
ZELEDON, JOSÉ CASTULO.....	July 14, 1923

MEMBERS.

BAGG, EGBERT.....	July 12, 1915
BROWN, HERBERT.....	May 12, 1913
CAMERON, EWEN SOMERLED.....	May 25, 1915
DAGGETT, FRANK SLATER.....	April 5, 1920
FANNIN, JOHN.....	June 20, 1904
HARDY, MANLY.....	Dec. 9, 1910
HOLLISTER, NED.....	Nov. 3, 1924
JUDD, SYLVESTER DWIGHT.....	Oct. 22, 1905
KNIGHT, ORA WILLIS.....	Nov. 11, 1913
MILLER, OLIVE THORNE (MRS. HARRIET MANN MILLER)...	Dec. 25, 1918
MORRIS, GEORGE SPENCER.....	April 12, 1922
RALPH, WILLIAM LEGRANGE.....	July 8, 1907
TORREY, BRADFORD.....	Oct. 7, 1912
WHITMAN, CHARLES OTIS.....	Dec. 6, 1910

ASSOCIATES.

ACKERMAN, JOSEPH MOODY.....	1919
ADAMS, CHARLES FRANCIS.....	May 20, 1893
ALLEN, CHARLES SLOVER.....	Oct. 15, 1893
ANTES, FRANK TALLANT.....	Feb. 6, 1907
ARNOLD, WILLIAM W.....	March 30, 1923
ATKINS, HARMON ALBRO.....	May 19, 1885
AVERY, WILLIAM CUSHMAN.....	March 11, 1894
BAER, JOHN LEONARD.....	May 28, 1924
BAILEY, BERT HEALD.....	June 22, 1917
BAILEY, CHARLES E.....	1905
BAIRD, LUCY HUNTER.....	June 19, 1913
BANKS, Miss MARTHA BURR.....	Dec. 13, 1917
BARLOW, CHESTER.....	Nov. 6, 1902
BARNARD, JOB.....	Feb. 28, 1923
BARROWS, MRS. W. H.....	Jan. —, 1921

BATTEN, GEORGE.....	Feb. 16, 1918
BAUR, GEORG [HERMANN CARL LUDWIG].....	June 25, 1898
BAYNES, ERNEST HAROLD.....	Jan. 21, 1925
BECKHAM, CHARLES WICKLIFFE.....	June 8, 1888
BENNETTS, WILLIAM JAMES.....	Sept. 13, 1920
BERIER, DELAGNEL.....	Feb. 11, 1916
BETTS, NORMAN DE WITT.....	May 21, 1917
BILL, CHARLES.....	April 14, 1897
BIRTWELL, FRANCIS JOSEPH.....	June 28, 1901
BLAIN, MERRILL WILLIS.....	Dec. 26, 1918
BOARDMAN, GEORGE AUGUSTUS.....	Jan. 11, 1901
BODINE, DONALDSON.....	Aug. 26, 1915
BOLLES, FRANK.....	Jan. 10, 1894
BOLTON, WILLIAM BOWEN.....	Sept. 17, 1922
BRACKETT, FOSTER HODGES.....	Jan. 5, 1900
BRAINARD, BARRON.....	May 15, 1919
BRANTLEY, WILLIAM FOREACRE.....	Sept. 9, 1914
BREESE, WILLIAM LAWRENCE.....	Dec. 7, 1888
BRENINGER, GEORGE FRANK.....	Dec. 3, 1905
BRENNAN, CHARLES F.....	March 21, 1907
BREWSTER, CAROLINE FREEMAN KETTELLE (Mrs. WILLIAM BREWSTER). March 3, 1924	
BREWSTER, EDWARD EVERETT.....	July 1, 1919
BRIGGS, JOSEPH STOCKDALE.....	1918
BROKAW, LOUIS WESTEN.....	Sept. 3, 1897
BROWN, JOHN CLIFFORD.....	Jan. 16, 1901
BROWN, STEWARDSON.....	March 14, 1921
BROWNE, FRANCIS CHARLES.....	Jan. 9, 1900
BROWNSON, WILLIAM HENRY.....	Sept. 6, 1909
BURKE, WILLIAM BARDWELL.....	April 15, 1914
BURNETT, LEONARD ELMER.....	March 16, 1904
BUTLER, [THOMAS] JEFFERSON.....	Oct. 23, 1913
BUXBAUM, MRS. CLARA E.....	March 23, 1914
BUZZELL, MRS. JAMES C.....	Jan. —, 1922
CAIRNS, JOHN SIMPSON.....	June 10, 1895
CALL, AUBREY BRENDON.....	Nov. 20, 1901
CAMPBELL, ROBERT ARGYLL.....	April —, 1897
CANFIELD, JOSEPH BUCKINGHAM.....	Feb. 18, 1904
CARLETON, CYRUS.....	Nov. 15, 1907
CARRYL, FRANK MALLARY.....	April 3, 1923
CARTER, CHARLES MORLAND.....	Sept. 1, 1922
CARTER, EDWIN.....	Feb. 3, 1900
CARTER, ISABEL MONTIETH PADDOCK (Mrs. EDGAR N. CARTER) Sept. 15, 1907	
CHADBOURNE, ETHEL RICHARDSON (Mrs. ARTHUR PATTERSON CHADBOURNE).....	Oct. 4, 1908

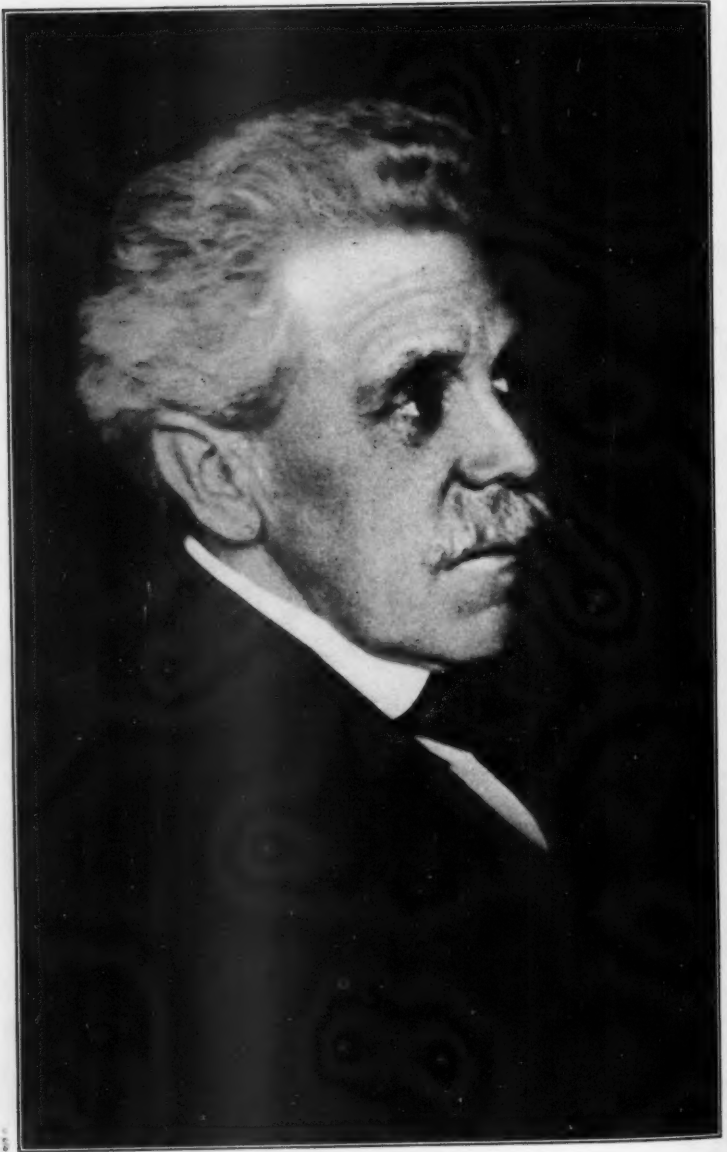
CHARLES, FRED LEMAR.....	May 6, 1911
CLARK, JOHN NATHANIEL.....	Jan. 13, 1903
COE, WILLIAM WELLINGTON.....	April 26, 1885
COLBURN, WILLIAM WALLACE.....	Oct. 17, 1899
COLLETT [COLLETTE], ALONZO MCGEE.....	Aug. 22, 1902
COMEAU, NAPOLEON ALEXANDER.....	Nov. 17, 1923
CONANT, MARTHA WILSON (Mrs. THOMAS OAKES CONANT).....	Dec. 28, 1907
CONKLIN, CHARLES EDGAR.....	Sept. 8, 1916
CORNING, ERASTUS, JR.....	April 8, 1893
CREHORE, FREDERIC MORTON.....	Oct. 16, 1919
DAFFIN, WILLIAM H.....	April 21, 1902
DAKIN, JOHN ALLEN.....	Feb. 21, 1900
DAVIS, CHARLES HENRY.....	Oct. 5, 1918
DAVIS, SUSAN LOUISE (Mrs. WALTER ROCKWOOD DAVIS).....	Feb. 13, 1913
DAVIS, WALTER ROCKWOOD.....	April 3, 1907
DEXTER, LEWIS.....	Aug. 19, 1923
DEXTER, [SIMON] NEWTON.....	July 27, 1901
DIONNE, CHARLES EUSEBE.....	Jan. 25, 1925
DODGE, JULIAN MONTGOMERY.....	Nov. 23, 1909
DORN, LOUIS W.....	1918
DULL, Mrs. A. P. L.....	Aug. 9, 1924
DUNLOP, ERIC BROOKE.....	May 19, 1917
DYCHE, LEWIS LINDSAY.....	Jan. 20, 1915
EATON, HOWARD.....	April 5, 1922
EIMBECK, AUGUST FREDERICK.....	Sept. 1, 1924
ELDRIDGE, ARTHUR S.....	Nov. 6, 1919
ELLIOT, SAMUEL LOWELL.....	Feb. 11, 1889
FAIRBANKS, FRANKLIN.....	April 24, 1895
FALGER, Mrs. WILLIAM.....	Aug. 2, 1923
FARQUHAR, ARTHUR.....	Feb. 21, 1920
FARWELL, Mrs. ELLEN SHELDON DRUMMOND.....	Aug. 6, 1912
FAY, DUDLEY BOWDITCH.....	Feb. 7, 1921
FERRY, JOHN FARWELL.....	Feb. 11, 1910
FERRY, MARY BISSELL.....	March 18, 1915
FISHER, WILLIAM HUBBELL.....	Oct. 6, 1909
FLANAGAN, JOHN HENRY.....	Feb. 23, 1920
FOOTE, FANNIE HUBERTA.....	1920
FOWLER, JOSHUA LOUNSBURY.....	July 11, 1899
FOX, WILLIAM HENRY.....	Nov. 3, 1921
FRANCIS, NATHANIEL ATWOOD.....	June 10, 1921
FULLER, CHARLES ANTHONY.....	March 16, 1906
FULLER, TIMOTHY OTIS.....	Aug. 17, 1916
GESNER, ABRAHAM HERBERT.....	April 30, 1895
GIBSON, LANGDON.....	Sept. 4, 1923
GOSS, BENJAMIN FRANKLIN.....	July 6, 1893
GRONBERGER, SVEN MAGNUS.....	April 24, 1916

HALES, HENRY TEASDEL.....	Nov. 6, 1913
HATCH, JESSE MAURICE.....	May 1, 1898
HAZARD, ROWLAND GIBSON.....	Jan. 23, 1918
HENDERSON, JOHN BROOKS.....	Feb. 4, 1923
HERRICK, Mrs. WILLIAM HENRY.....	1923
HEWITT, CHARLES GORDON.....	Feb. 29, 1920
HILL, JAMES HAYNES.....	Dec. 11, 1922
HILL, WILLIAM HENRY.....	Oct. 14, 1913
HINE, Mrs. JANE LOUISA.....	Feb. 11, 1916
HITCHCOCK, Mrs. ELEANOR BECKWITH.....	March 3, 1917
HOADLEY, FREDERICK HODGES.....	Feb. 26, 1895
HOLMES, LaRUE KLINGLE.....	May 10, 1906
HOOPES, JOSIAH.....	Jan. 16, 1904
HOWE, FLORENCE AURELLA.....	July 9, 1913
HOWE, INEZ ADDIE.....	Nov. 26, 1924
HOWE, LOUISE.....	Sept. 13, 1912
HOWLAND, JOHN SNOWDEN.....	Sept. 19, 1885
HUBBARD, SARA ANDERSON.....	July 31, 1918
INGALLS, CHARLES EDWARD.....	May 31, 1917
INGERSOLL, JOSEPH CARLETON.....	Oct. 1, 1897
JACKSON, THOMAS HOOPES.....	Feb. 27, 1922
JENKS, JOHN WHIPPLE POTTER.....	Sept. 26, 1894
JENNEY, CHARLES FRANCIS.....	Nov. 29, 1923
JEWEL, LINDSEY LOUIN.....	Sept. 5, 1915
JOHNSON, REGINALD MANSFIELD.....	Feb. 11, 1923
JOUY, PIERRE LOUIS.....	March 22, 1894
JUSTICE, HENRY.....	March 1, 1918
KELKER, WILLIAM ANTHONY.....	Feb. 15, 1908
KNAPP, Mrs. HENRY A.....	Spring, 1918
KNIGHT, WILBER CLINTON.....	July 28, 1903
KNOX, JOHN COWING.....	June 10, 1904
KOCH, AUGUST.....	Feb. 15, 1907
KUMLIEN, LUDWIG.....	Dec. 4, 1902
KUMLIEN, THURE LUDWIG THEODOR.....	Aug. 5, 1888
LAKE, LESLIE WALDO.....	Feb. 7, 1916
LANGILLE, JAMES HIBBERT.....	April 9, 1923
LANTZ, DAVID ERNEST.....	Oct. 7, 1918
LATIMER, CAROLINE P.....	April 19, 1916
LAWRENCE, ROBERT HOE.....	April 27, 1897
LEE, LESLIE ALEXANDER.....	May 20, 1908
LEVY, WILLIAM CHARLESWORTH.....	July 5, 1914
LINDEN, CHARLES.....	Feb. 3, 1888
LLOYD, ANDREW JAMES.....	June 14, 1906
LORD, WILLIAM ROGERS.....	Feb. 2, 1916
MABBETT, GIDEON.....	Aug. 15, 1890
MABBOTT, DOUGLAS CLIFFORD.....	Sept. 15, 1918

MAITLAND, ALEXANDER.....	Oct. 25, 1907
MAITLAND, ROBERT LENOX.....	March 11, 1920
MARBLE, CHARLES CHURCHILL.....	Sept. 10, 1900
MARCY, OLIVER.....	March 19, 1899
MARIS, WILLARD LORRAINE.....	Dec. 11, 1895
MARSDEN, HENRY WARDEN.....	Feb. 26, 1914
MARTIN, MRS. MARTHA EVANS.....	Jan. 6, 1925
McCONNELL, THOMAS LEO.....	Oct. 13, 1922
McEWEN, DANIEL CHURCH.....	Nov. 1, 1909
McHATTON, HENRY.....	April 22, 1917
McINTIRE, MRS. HERBERT BRUCE.....	May —, 1923
McKINLAY, JAMES.....	Nov. 30, 1899
McMAHON, WALTER FREEMAN.....	Aug. 28, 1918
MEAD, GEORGE SMITH.....	June 18, 1901
MEANS, CHARLES JOHNSON.....	1925
MILLS, ENOS ABIJAH.....	Sept. 21, 1922
MILLS, R. WALTER.....	Feb. 16, 1924
MINOT, HENRY DAVIS.....	Nov. 13, 1890
MORRELL, CLARENCE HENRY.....	July 15, 1902
NICHOLS, HOWARD GARDNER.....	June 23, 1896
NIMS, LEE.....	March 12, 1903
NORTHROP, JOHN ISALAH.....	June 26, 1891
OLDS, HENRY WORTHINGTON (HENRY OLDYS).....	Jan. 20, 1925
OLIVER, HENRY KEMBLE.....	Oct. 25, 1919
PARK, AUSTIN FORD.....	Sept. 22, 1893
PENROSE, CHARLES BINGHAM.....	Feb. 27, 1925
PAULMIER, FREDERICK CLARK.....	March 4, 1906
POMEROY, GRACE VIRGINIA.....	May 14, 1906
POMEROY, HARRY KIRKLAND.....	Jan. 27, 1915
POWELL, MRS. S. W.....	1918
PUTNAM, FREDERIC WARD.....	Aug. 14, 1915
QUIGGLE, JAMES CLARENCE.....	June 21, 1921
RAGSDALE, GEORGE HENRY.....	March 25, 1895
RAWLE, FRANCIS WILLIAM.....	June 12, 1911
RAYMOND, BESSIE.....	1923
RAYMOND, MRS. CHARLES E.....	Feb. 5, 1924
READY, GEORGE HENRY.....	March 20, 1903
REED, CHESTER ALBERT.....	Dec. 16, 1912
RICHARDSON, JENNESS.....	June 24, 1893
ROBBEN, NANCY P. H.....	1919
ROBBINS, ROYAL ELISHA.....	Feb. 9, 1920
ROBINS, JULIA STOCKTON (MRS. EDWARD ROBINS).....	July 2, 1906
SACKETT, CLARENCE.....	May —, 1923
SAND, ISABELLA LOW.....	April 20, 1906
Savage, WALTER GILES.....	Aug. —, 1917
SCHENCK, FREDERIC.....	Feb. 29, 1920

SELOUS, PERCY SHERBORN.....	April 7, 1900
SHANNON, WILLIAM PURDY.....	Oct. 29, 1916
SILSBEE, THOMAS.....	April —, 1919
SLATER, JAMES HOWE.....	Feb. 22, 1895
SLEVIN, THOMAS EDWARDS.....	Dec. 23, 1902
SMALL, EDGAR ALBERT.....	April 23, 1884
SMALL, HAROLD WESLEY.....	March 12, 1912
SMITH, CLARENCE ALBERT.....	May 6, 1896
SMITH, HENRY ALBERT PATTINSON.....	April 29, 1923
SMITH, RUTH COOK (Mrs. H. A. HAMMOND SMITH).....	Jan. 2, 1912
SNOW, FRANCIS HUNTINGTON.....	Sept. 20, 1908
SOULE, CAROLINE GRAY.....	April 27, 1920
SOUTHWICK, JAMES MORTIMER.....	June 3, 1904
SPAULDING, FREDERICK BENJAMIN.....	Oct. 22, 1913
STANTON, JONATHAN YOUNG.....	Feb. 17, 1918
STEWART, Mrs. CECIL.....	Summer, 1921
STONE, WILLARD HARRISON.....	March 15, 1895
STYER, KATHARINE REBECCA (Mrs. J. J. STYER).....	Jan. 20, 1917
SWEIGER, HELEN BRONSON (Mrs. JACOB L. SWEIGER).....	March 24, 1907
TAYLOR, ALEXANDER O'DRISCOLL.....	April 10, 1910
THOMAS, EMILY HINDS.....	Oct. 17, 1920
THOMPSON, MILLETT TAYLOR.....	Aug. 7, 1907
THORNE, PLATT MARVIN.....	March 16, 1897
THORNE, SAMUEL.....	July 4, 1915
THURBER, EUGENE CARLETON.....	Sept. 6, 1896
TWEEDY, EDGAR.....	Nov. 17, 1918
UPHAM, MARY CORNELIA (Mrs. WILLIAM HENRY UPHAM).....	Nov. 29, 1912
VENNOR, HENRY GEORGE.....	June 8, 1884
WALLACE, JAMES STIRTON.....	July 24, 1922
WATERS, EDWARD STANLEY.....	Dec. 27, 1902
WALKER, ROBERT LATSHAW.....	Nov. 16, 1916
WEEKES, CHARLES HENRY.....	Nov. 14, 1921
WELLES, CHARLES SALTER.....	Feb. 24, 1914
WHITE, JAMES CLARKE.....	Jan. 5, 1916
WILEY, LEO.....	Oct. 31, 1918
WILLARD, SAMUEL WELLS.....	May 24, 1887
WILSON, SIDNEY STEWART.....	Nov. 22, 1911
WINDLE, FRANCIS.....	Feb. 24, 1917
WISTER, WILLIAM ROTCH.....	Aug. 21, 1911
WOOD, JOHN CLAIRE.....	June 16, 1916
WOOD, NELSON RUSH.....	Nov. 8, 1920
WOOD, WILLIAM.....	Aug. 9, 1885
WOODRUFF, EDWARD SEYMOUR.....	Jan. 15, 1909
WOODWARD, FRANK ERNEST.....	Aug. 5, 1921
WOODWORTH, ROY CHURCH.....	June 29, 1922
WORTHEN, CHARLES KIMBALL.....	May 27, 1909

WRIGHT, HORACE WINSLOW	June 3, 1920
WRIGHT, SAMUEL	Jan. 18, 1917
YOUNG, CURTIS CLAY	July 30, 1902
ZAPPEY, WALTER REAVES	Feb. 20, 1914



Nathaniel B. Barrows,

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WALTER BRADFORD BARROWS.

BY A. K. FISHER.

Plate I.

On September 26, 1883, twenty-one ornithologists met in New York City, and, through their activities, the American Ornithologists' Union was founded. This association, which now has a membership of about 1,650 in the various classes, at the first meeting almost immediately added twenty-four to its number, and among the first elected was Walter Bradford Barrows, the subject of this paper, who died of apoplexy at East Lansing, Mich., the morning of February 26, 1923.

Barrows was born at Grantville (now Wellesley Hills), Mass., January 10, 1855. His mother, Elizabeth Adams Cate, taught at Bradford College (then Bradford Academy) and was president of Wheaton (Massachusetts) Female Seminary in 1849, before her marriage to his father, William Barrows, a Congregational minister and story writer.

In the romantic place of his birth other nature lovers first opened their eyes to the world. The rolling country, with its abundance of beautiful flowers and wealth of deciduous trees, an ocean of green hills, as Bradford Torrey would say, probably made an impression on his youthful mind which gently led him along nature's ways, so that later, through unconscious inspiration, he became an ardent student of biological subjects.

Comparatively small things, at times, change the course of streams, and similarly, unimportant thoughts or events will lead

men out of the dormant state, or, when realization comes, into one to their particular liking. Environment, therefore, at times may have a governing influence over many of us without our suspecting whence it came. At all events, Barrows' love of natural history was inborn and he never seemed happier than when following out some line of study that, when completed, would add to our knowledge of the subject.

His father was very tolerant and broad in his theological views, was passionately fond of fishing and shooting, and had a genuine interest in the great out-of-doors. He very wisely encouraged his boys to spend their leisure time in the woods and fields and on the lakes or streams, rather than in the village. Some of his stories, as "Seven Nights in a Hunter's Camp," show knowledge and appreciation of that kind of life, and his companionship with his son may have influenced the latter through an inherited tendency in following his future course.

His brother Herbert, three years his senior, had other interests, so that in the early beginnings of nature studies Walter and his younger brother Morton were almost always field companions. They never were embarrassed with ready money, but the alertness and ingenuity of healthy, interested boys enabled them to accumulate enough to buy needed but inexpensive equipment.

Walter used to laugh when telling a rather amusing incident of an experience he went through in early life which shows that rigid economy may, at times, be carried to an unnecessary extreme. His father had on the home place some apple trees that bore good and, for the needs, an abundance of fruit. To make the generous supply go as far as possible, the father instructed his children to eat only specked apples, as otherwise they might rot and be wasted. But try as they would, they never could catch up and have the pleasure and satisfaction of eating sound fruit. With this training vividly in his mind, Walter made the resolution that when his children came, they would be given sound fruit and that specked apples would be eaten only when no others were at hand.

At fourteen years of age Barrows began collecting birds' eggs, taking only one from each nest. He followed this plan for several years, so that the sets in his collection during the period were composite ones representing as many different nests as there were eggs.

Every school holiday was spent in the search for new specimens, and it required something more than a Scotch mist to keep the boys indoors. Distance did not weaken his enthusiasm and in the case of his first nest of the Olive-sided Flycatcher, a number of daily trips had to be made to a rather remote place before he was successful in locating his prize.

When about fifteen years old, he was lucky enough to receive some lessons in what was then called stuffing birds, as taxidermy was in those days almost an unknown term. With patience and practice he soon acquired local recognition and received small sums for mounting Blue Jays and other birds of bright plumage for decorative purposes. Although this occupation was not followed long or seriously, he became very skilful and some of his later work ranked well with that of more carefully trained specialists.

About 1872 there occurred, late in the autumn, a long, protracted and severe northeastern storm, and his neighbors brought to him dead specimens of an unknown bird found in the pastures bordering the town. Later these were identified as Little Auks. This was quite an event in the life of the young ornithologist and undoubtedly carried his thoughts to the mysterious realms of the region of ice and snow. His graduating thesis at the Massachusetts Institute of Technology was "The Auk," and very probably the selection of this subject was inspired by his previous experience with the specimens which were furnished to him by the storm.

Samuel's 'Birds of New England' was the only easily available work for identification and reference. He made, however, occasional trips to the Athanaeum Library in Boston, a long journey in those days, and verified his identifications by studying the plates of Audubon and Wilson.

All his early education was gathered from the public schools of Reading, twelve miles northwest of Boston. He graduated from the high school in 1872 and that autumn entered the Institute of Technology, graduating four years later with the degree of Bachelor of Science.

After graduating he went, on July 1, 1876, to Ward's Natural History Establishment at Rochester, N. Y. While there he was general assistant, devoting himself largely to the classification and arrangement of the invertebrates and in looking after correspond-

ence. The force included a genial crowd, a number of whom later made their mark along various lines of natural science. They also seemed to have absorbed from one another a trait of companionship and joking which are commendable qualities and help carry one over rough places and lighten the burdens of unstable life.

On one occasion, when the owner of the establishment was away and a number of collectors were in foreign countries, Barrows was left in charge but given little freedom in the disbursement of money. A notice of a cablegram with collect charges aggregating seventy-five dollars was sent to him with the statement that charges must be paid before the message would be delivered. This was a serious situation, for unless the information was especially valuable he would be criticized and would possibly have to bear the expense. He finally decided to act, and found the cablegram to read "Have secured seven oranges. Will get more." He was appalled at what seemed to him a costly joke but later, in looking over the correspondence, found that the cablegram had been sent by a man who expected to secure some good specimens of ourangs. He immediately experienced great relief.

About May 15, 1879, he resigned his place at Rochester and accepted the position of instructor in physics and chemistry in the Colegio Nacional Concepcion del Uruguay under a three-year contract with the Government of Argentina. In the early days of July he entered the waters of La Plata and, through the chilly mists, beheld great flocks of Gulls and Terns which, during the winter months, made this stretch of water their home. After considerable delay in completing arrangements, he landed two months later, in the darkness of early morning, on the muddy shore of the west bank of the Rio Uruguay at the old town of Concepcion, about 400 miles north of Buenos Aires. The inducement for this long trip and rather unremunerative work was that it gave a splendid opportunity to study the fauna of the country.

His long vacations were passed in excursions on the pampas and along the fringes of settlements. He had many interesting experiences and made rather extensive ornithological collections comprising rather less than 200 species. Late in January, 1881, he became one of a party delegated by the Argentine Government to make a provisional study of the fauna and flora of the Pampean

Sierras in the extreme southern parts of the Province of Buenos Aires, a region then imperfectly known and only recently vacated by hostile Indians. This expedition lasted about ten weeks but at least half the time was wasted on account of imperfect organization. The party went by rail over 200 miles southwest to Azul, thence 250 miles by stage coach to Bahia Blanca on the coast. During this trip about 800 miles of the pampas were hastily crossed and a greater part of the time spent among the desolate Sierras and the plains near by.

Most of the observations were made near Concepcion and formed the basis of his paper on the "Birds of the Lower Uruguay" published in Vol. VIII of the 'Bulletin of the Nuttall Ornithological Club,' 1883, and Vol. I of 'The Auk,' 1884. It is also to be assumed that some material from this southern country was used later in his paper on the "Birds of Prey," in the 'Standard Natural History.'

On his return to the United States in 1881 he was instructor in Science during part of that year and the one following in the Massachusetts State Normal School at Westfield. On June 29, 1882, he married Lizzie Maud Withall, at Rochester, N. Y., and in the autumn went to Middletown, Conn., where he became instructor in biology in Wesleyan University, and during his last two years was curator of the Museum. From 1884 to 1886 he also, on occasions, instructed in botany in Trinity College, Hartford, Conn.

Not very long after he reached Middletown he became acquainted with John H. Sage, who lived in Portland just across the river. This early acquaintance soon ripened into a friendship which lasted to the end. They often went on field excursions together in the neighboring country and passed many happy days in making observations and collecting material for future reference.

On July 1, 1886, Barrows came to Washington, D. C., and entered the Division of Ornithology and Mammalogy of the United States Department of Agriculture, which later developed into the Bureau of Biological Survey. Here he almost immediately took up lines of work in which he was deeply interested. The economic investigations which brought out in detail the relations of the food of birds to agriculture appealed strongly to him, and in due course of time he prepared the first publication in the Division touching on

this subject. This was Bulletin No. 1 on "The English Sparrow in North America" and contained over 400 pages and a carefully prepared map of the distribution of the Sparrow at the end of the year 1886. At this time the subject was a very vital one, as many persons, attracted by a previous animated controversy, were anxious to have information covering the real status of this introduced species.

When Barrows was gathering data in the preparation of the bulletin, he and the writer spent many interesting hours together on the Department of Agriculture grounds making observations on the habits of the species and collecting material for stomach examination. In these grounds Barrows had an excellent opportunity to observe the birds in their normal condition as they were found in the shrubbery along the drives, on the open lawns, in the experimental plots near the green-houses, and about the buildings. This opportunity to observe, under varied conditions, made him watchful for items of special interest for the forthcoming publication.

In the examination of stomach contents at that time, he and other members were terribly handicapped because the reference collections of seeds and other materials were just in the beginning of formation and, therefore, of little value. When an unknown seed came up for identification, as it often did, the student was forced to go afield and try to glean from nature's store-house the necessary ones for comparison. On rare occasions man's infirmities have proved to be of assistance to him. When the food of the Crow was first being taken up for study, great quantities of a certain seed were found in material being examined but could not be identified. Barrows thought if the seed had a peculiar taste or smell it might be determined. Accordingly, he bit one open and the next morning, as he was very susceptible to its toxic influence, his mouth was badly swollen from the effects of poison ivy. To verify absolutely this novel identification, the waxy coating of a fresh seed was then removed and it was found that he had the honor of identifying the seed even though at the price of much personal discomfort.

In the preparation of the bulletin on the Crow, published in 1895 as Bulletin No. 6 of the Division of Ornithology and Mammalogy, Barrows devoted much time to the study of Crow roosts, which at that period were of much local interest in the vicinity of Washington, and he made quite frequent visits to them for the purpose of

obtaining information relative to the habits and abundance of these maligned birds, paying particular attention to their food, so that, in summing up the evidence, Dr. J. A. Allen, in his review of the bulletin, states that the investigation "goes far to set off satisfactorily the economic status of a bird unrelentingly persecuted for crimes that are, to a large extent, imaginary, or, at least, grossly magnified."

From March to September, 1891, Barrows was Acting Chief of the Division while Dr. C. Hart Merriam, the Chief, was absent with the Death Valley party and, later by direction of the President, making a study of the fur seals on the Pribilof Islands, Alaska.

Resigning his position under the Federal Government, Barrows entered the Michigan Agricultural College, East Lansing, at the opening of the classes in 1894, as Professor of Zoology and Physiology, in which position he remained until his death. During the years 1897 and 1898 he extended his work and served as Entomologist at the Michigan Agricultural Experiment Station. He very soon became a member of the Michigan Academy of Sciences, was its secretary during the period from 1896 to 1901 and president in 1905. Of other societies relating to biology, he was a Fellow of the American Ornithologists' Union, a Member of the American Society of Mammalogists, of the Association of Economic Entomologists, and of the American Association for Advancement of Science.

His wife died, April 6, 1916, at East Lansing, and from that time until he passed away his daughter was his constant field companion, not only in Michigan but also at their old summer home in eastern Massachusetts, where during vacation periods he devoted much time to fishing and boating. Being on the water probably was a pleasure experienced through life for, while in Washington, we went out on the Potomac on several occasions to observe or collect specimens. We happened to go on one of the trips at the time of the migratory flight of Bonaparte's Gulls and Barrows thoroughly enjoyed watching the birds decoyed near the boat at close range as they hovered, circled, crossed, and re-crossed apparently in attempts to learn something of our motives or reasons for our presence.

He was preeminently a home man and when with members of his family rarely spoke of his scientific activities, or accomplishments, or indeed of himself. It was difficult, therefore, for those of a scientific trend of mind to glean much about him unless alone in his company. On such occasions he was an entertaining companion and was free to talk most interestingly on whatever zoological subject might come under observation or to mind.

He was an easy speaker and, through his combined fondness for children and birds, devoted considerable time to lecturing unofficially to young people throughout the State of Michigan hoping to stimulate their interest in birds by increasing their knowledge on the subject, and he was ever ready to help them solve their avian problems if advised of their troubles.

His close associates undoubtedly knew that, although preeminently an ornithologist, Barrows was also a general naturalist with a vast fund of knowledge of all the allied sciences.

Those who have delved among nature's varied forms as he did and who can hardly step without coming in contact with some familiar object of more than passing interest, often wonder whether their satisfaction and contentment, even though they are not recognized as authorities in any branch, are not far greater than that experienced by specialists in zoology whose activities are wholly centered in some small order of a given class.

The general naturalist of almost by-gone days carried on his field operations with great satisfaction, for he was certain that nature's book lying open before him had in full view a multitude of diverse forms continually to stimulate his interest and to broaden his knowledge of her varied treasures. He was the frontiersman who made it possible for many of more recent generations to learn and absorb biological truths. Even now, on occasion, to answer perplexing questions, we have to turn to his records which, by good fortune, have been left to us as a precious heritage.

The versatility and broad general knowledge of these old-time naturalists have made them important factors in leavening the loaf, and by judicious counsel and carefully made records they have aided many in reaching the highest pinnacle of advanced biology.

During the time Barrows was laying the foundation of his future work he was enthusiastic and keen to learn all he could regarding bird life. Along about 1871, when he heard of the colony of Night Herons at Barnstable marshes, he went from Reading to visit this already famous gathering. He walked many miles along the beach and through the dunes to the colony, where he had an opportunity to study at close hand a new bird acquaintance. This experience made such a vivid impression upon his mind that, in August, 1922, he was lured back to the old stamping ground. In company with his daughter and a friend, he went from his summer home at Cataumet across the Cape to Sandy Neck and walked down the shores of Cape Cod Bay, following the same route that the sixteen-year-old boy had taken when in search of the colony. He remembered the place perfectly and found the Herons in the same old locality in even greater abundance than formerly. The second trip may have been lacking a little in boyish excitement but was enjoyed as much as the earlier one and furnished material for future conversation.

Not knowing that anyone else was particularly interested, it might be said that the trip was continued into the winter, since 'The Auk' for January, 1923, contained the commencement of an admirable article on the same colony by Alfred O. Gross. This paper furnished Barrows many interesting details which it was impracticable for him to note during his necessarily limited trips. I am glad that he was able to see at least a part of this paper, for it is human nature to be deeply interested in that of which one has some knowledge.

After coming to Michigan, Barrows very soon began to take a deep interest in the birds of the State, and as time passed on, his large work on the birds of Michigan was evolved. After this notable volume appeared, in 1912, he published little on ornithology except occasional papers in 'The Auk.' In collecting and verifying material for the book, he visited every person in the State who was interested in birds and who had a collection of skins or eggs. He was painstaking in carefully examining questionable records or those of rarer species, so that his work might be as accurate as possible.

In the last ten years of his life he spent a considerable part of

May and early June in the field working out the distribution of Kirtland's Warbler and so far as possible determining the exact breeding range of the species. An account of this is given in 'The Auk' for 1921 (p. 116). In the spring of 1921 he sent a very cordial invitation to me to accompany him on one of these trips for he well knew the interest I had in this peculiarly distributed species. It was a disappointment that I could not accept, for as it subsequently turned out it was the last opportunity to go with him, and at our last meeting the following year he touched briefly on the pleasures I had missed.

He was very active in bird protection, and for many years kept in touch with the Michigan State Department of Conservation, assisting in its work, and he was authorized to impress any deputy wardens to aid him in carrying on research work in the field. He was always dependable in identifying game or fish whenever questions were raised in or out of court. He became quite absorbed and interested in the advancement of bird banding and, on the day before his death, was pleased to note that many of the leading papers in Michigan published a syndicated article on this subject.

Barrows was very much interested, too, in bird photography and during the period between 1916 and 1923 spent a good deal of time in this pursuit. He photographed all the winter birds that came to the suet or the feeding stations on his window sills, and his Cardinal and Blue Jay pictures and those of groups of Evening Grosbeaks and Bohemian Waxwings were truly artistic.

Ornithologists' instincts and dormant interests seem to follow them to the end, and Barrows, the morning before he passed away, called his daughter's attention, as they walked over the snow-clad fields, to the Horned Larks which passed with swift and erratic flight and to the increasing number of Crows as indications that spring was approaching. It might truthfully be said that, in mellowing fruit, the sweetness and flavor are present to the end.

Barrows's immediate surviving relatives are a daughter, Miss Marguerite Barrows; a son, Prof. William Morton Barrows, of the Ohio State University; and a brother, Morton Barrows, Esq., of St. Paul, Minn. He had a wide acquaintance throughout the country, especially in zoological circles, and many friends and acquaintances in Lansing and neighboring towns.

On March 4, 1923, public recognition of his life and character was given at a vesper memorial service in the Armory at the Michigan Agricultural College. Stepping as he did directly from an active, cheerful life across the Divide into the Unknown was a most ideal death.

Those of us who are still on the firing line will miss him. How can it be otherwise when a man of his fine character and cheerful companionship has gone?

The portrait which accompanies this paper is a modified enlargement of a photograph taken with a field camera in his study a few weeks (January 10) before his death by Mr. Walter E. Hastings, of South Lyon, Mich. Through his love for birds he had a great deal in common with Barrows and their association was most pleasant.

The bibliography of Barrows, which has been kindly prepared for me by Mr. Wm. H. Cheesman, an associate member of the Union, is appended herewith.

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GROWTH DEVELOPMENT AND REACTIONS OF YOUNG GREAT HORNED OWLS.

BY BESSIE P. REED.

Plates II-IV.

THE material upon which this study is based consisted of four young Great Horned Owls, two of which were known to have come from the same nest in two successive seasons. In the nesting season of 1919 a pair of Great Horned Owls (*Bubo virginianus virginianus*) was found nesting in a dead cottonwood tree about two miles from Lawrence, Kansas. This tree stands almost at the outer (western) edge of a piece of pasture timberland comprising about six acres. The plot contains almost no undergrowth; the trees are mostly cottonwoods and elms with a few hickories and hackberries. A small stream flows through the eastern part, its old channel forming a dry, shallow ravine at the western edge.

The plot is about one quarter of a mile from a farmhouse and a half mile from the roadway.¹

The particular tree chosen as the nesting site has a diameter of about two and a half feet with no branches lower than twenty feet from the ground. In 1921 the Owls used an open nest.

After 1921 they resorted to a cavity in the same cottonwood for nesting and from that time till 1924 have not used the open nest. This cavity is on the upper surface of a horizontal limb stretching to the south and about twenty feet from the ground. Sometime in the past a large branch evidently broke off from this limb and decay hollowed out an irregular opening about one foot across at its greatest extent.

From the time that the nesting site was discovered fresh pellets could be found under the nesting tree and in the immediate vicinity and on visiting the plot one or more of the adult birds was invariably flushed. On the last visit in 1923 (September 22) neither of the adults was flushed and no pellets were present nor could any other evidence be found that they were still there. However, in the nesting season of 1923 the adults were known to have nested there although no close inspection of the nest was made.

Two young were reared in 1924 at the old site and were flying about the wooded plot the last of May.

On April 2, 1921, the open nest was blown out of the tree during a spring blizzard. Evidently there was but one Owl in the brood of that season. This bird, which will hereafter be referred to as Number 1, was about five weeks old at the time and was covered by a fine, soft, down, cream buff in color. It was taken captive, the parents following at a respectful distance until the edge of the timber was reached. Close study was made of this specimen and data recorded even during the period, from five to eleven weeks, that it was in the possession of another party. From this time on during its captivity no attempt was made to tame it; as nearly as possible natural conditions were maintained. When it was four months and three weeks old (July) it escaped.

¹Thanks are due to Robert and James Coghill for Owls Nos. 1 and 2. To Mr. C. D. Bunker for Owl No. 3, and for kindly criticism and suggestions. To the staff of the Field Museum for access to literature. To Dr. H. H. Lane of the University of Kansas for valuable assistance in the preparation of the manuscript.

The study was not nearly completed, so the next year (1922) one of that season's brood was removed from the nest on March 19. This bird, which will be alluded to as Number 2, was estimated to be about three weeks old at that time. It was one of a family of three. When taken it weighed one and a half pounds and had a wing spread of twenty-one inches. Its covering was not so heavy as that of Number 1, since it was two weeks younger.

On March 31 of the same year when Number 2 was supposed to be five weeks old some one shipped a young Great Horned Owl from Missouri to the Dyche Museum of the University of Kansas to be mounted. It was judged too young for that purpose so it was given over for observation. It will be referred to as Number 3. It appeared to be about one week older than Number 2.

The individual hereafter designated as Number 4 was found along the roadside about one-half mile south of the nesting site about April 1, 1923. It is not known whether it came from the same nest or not, although a pair of adult birds had nested in this same tree in 1923. It seems improbable that this nestling could have traveled that distance since it was too young to fly but no other pair was known to have nested anywhere else in that region. Its age was estimated to be about five weeks.

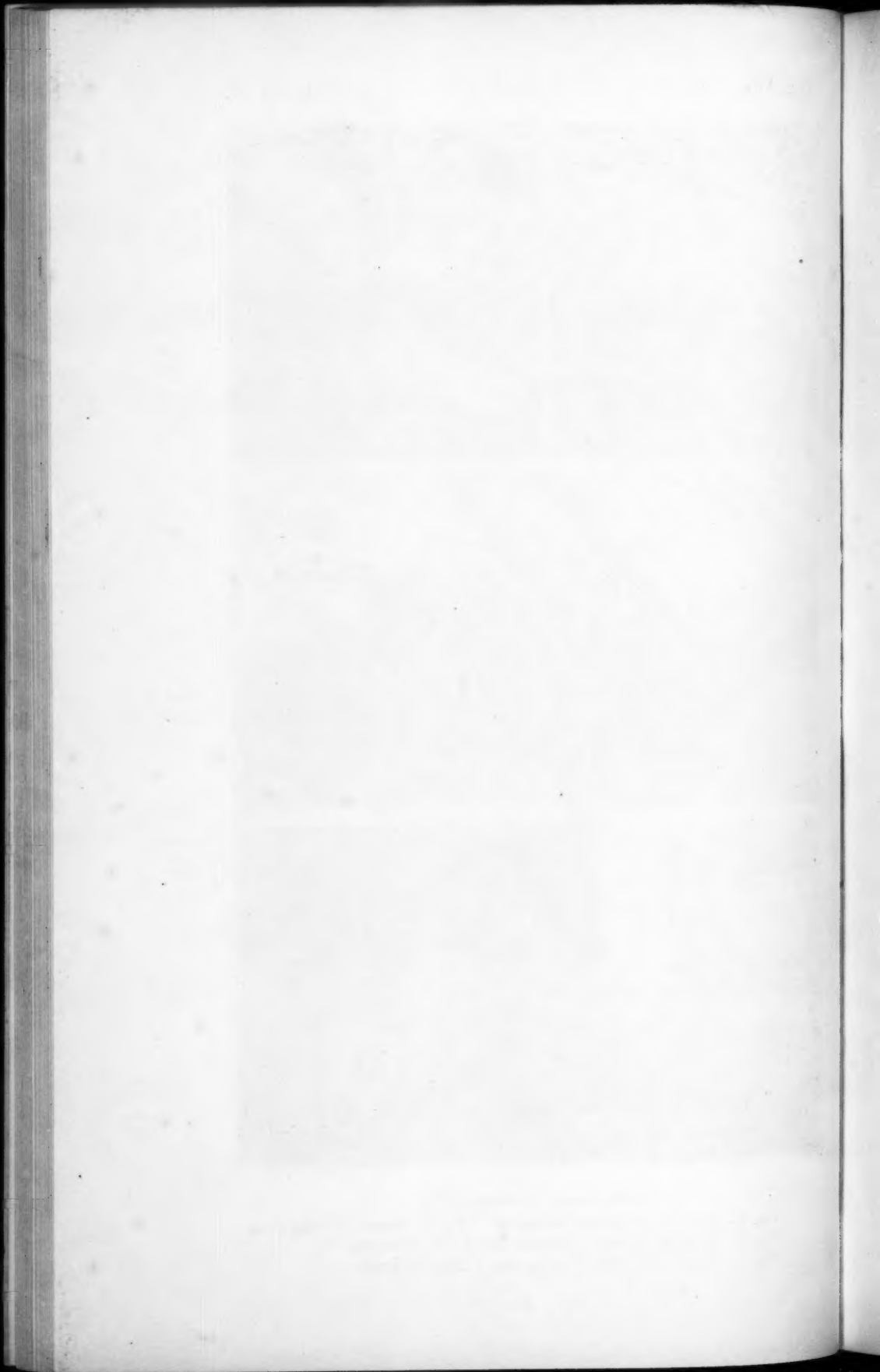
These young Owls spent their captivity in a large shed, one side and one end of which was inclosed with woven wire. After more than a year of daily observation Numbers 2 and 3 were taken to a heavily timbered district about seven miles southwest of Lawrence and freed (April 7, 1923). Number 2 found its way back across open country to the western edge of the city. It was found roosting in a densely populated region and shot (June 4). Number 4 was taken to timberland about seven miles west of Lawrence and freed on June 14, 1923, when it was about sixteen weeks old.

The estimates on the ages of these Owls appear quite accurate when compared with the fledglings figured by Dixon (Condor, 1904, pp. 47-55). These latter had their ages definitely determined and in appearance resemble Number 2. The same comparative size along with conditions of plumage would seem to verify the estimated ages of Numbers 2 and 3.



YOUNG GREAT HORNED OWLS.

- Fig. 1. Bird No. 2 about 3 weeks old. Fig. 2. Same, 4 weeks old.
Fig. 3. Bird No. 2 (right) 5 weeks; No. 3 (left) 6 weeks.
Fig. 4. Bird No. 2 (left) 6 weeks; No. 3 (right) 7 weeks.



RECORDS.

When Numbers 2 and 3 were taken an effort was made to follow their development by recording accurate weights and measurements at regular intervals, and the condensed results are shown in the accompanying tables. Weights for Number 2 were recorded weekly beginning with the estimated age of three weeks. Measurement of extent of wing spread was also begun at this time; body length was recorded for the first time at the age of four weeks. These records for Number 3 were begun at the estimated age of six weeks. All weight records were taken twelve hours after feeding with one exception,—in the case of Number 3 at the age of nine weeks when it was accidentally fed immediately before weighing. The detailed figures are given on the following page.

Changes in appearance are shown by the accompanying photographs (Pls. II-III). As is to be expected, the growth increased more rapidly in the earlier weeks, reaching a stationary stage about the thirteenth or fourteenth week. A slight loss in weight is displayed by both birds, beginning at about twelve weeks. This might have been due to improper feeding but more probably was correlated with the very noticeable change in plumage which occurred at this time. Feathers are rapid in growth and this very rapidity is exhaustive to the vital energies¹. It is particularly noticeable that Number 2 never did attain the weight of Number 3, although the latter had the same adult wing spread and body length. Number 3 was, consequently, somewhat less active and did not learn to fly as early as Number 2. Number 2 was able to fly as much as 200 feet at the age of sixteen weeks but was not able to rise any distance in the air, while Number 3 did not fly more than fifteen or twenty feet at this age.

While it might be objected that these observations would not apply to nestlings under natural conditions it is never-the-less felt that the observations are of sufficient value to justify recording.

PLUMAGE.

At the age of three weeks the gray down described as the first covering, was replaced by soft, fluffy feathers, the horns or ear

¹ Coues, Key to N. A. Birds, 3rd Ed. 1887.

Age	Length in Inches		Increase in Length		Extent in Inches		Increase in Extent		Weight in Ounces		Increase in Weight	
	No. 2	No. 3	No. 2	No. 3	No. 2	No. 3	No. 2	No. 3	No. 2	No. 3	No. 2	No. 3
3 wks.					21				24			
4 "	10.5	—	—	—	26		5		29		5	
5 "	13	—	2.5	—	33		7		33		4	
6 "	14	15	1	—	40	36	7		36	36	3	
7 "	16	16	2	—	45	42	5	6	36	42	0	6
8 "	17	17	1	1	47	42	2	0	39	42	3	0
9 "	17	18	0	1	50	46	3	4	40	56	1	14
10 "	19	18	2	0	51	49	1	3	40	52	0	4
11 "	19	18	0	0	54	50	3	1	44	52	4	0
12 "	19	19	0	1	55	51	1	1	44	56	0	4
13 "	20	19	1	0	55	52	0	1	43	56	-1	0
14 "	20.5	20	0.5	1	55.5	55.5	0.5	3.5	42	53	-1	-3
15 "	20.5	20	0	0	55.5	56	0	0.5	44	52	2	-1
16 "	20.5	20	0	0	55.5	56	0	0	46	52	2	0
17 "	—	20	—	0	—	56	—	0	—	56	—	4
20 "	21	—	0.5	—	56	—	0.5	—	43	—	-3	—
21 "	—	21	—	1	—	56	—	—	—	56	—	0
57 "	21	—	0	—	56	—	0	—	43	—	—	—
58 "	—	21	—	0	—	56	—	—	—	56	—	0

tufts showing as little compact patches, slightly higher than the rest of the plumage. On the whole the color was cream buff with faint, indefinite streakings; the wings bore the most decided markings; the primaries and secondaries were becoming unsheathed. At the age of six weeks the wings and tail showed the most noticeable change in plumage. At the ages of eight and nine weeks respectively both birds showed the markings of the immature adult plumage although the fluffy nestling feathers were still prominent. As the feathering took place on the body, long, well marked feathers appeared in strong contrast against the nestling feathers. The climax in the change in plumage seemed to come at about eleven weeks. From that time on the adult plumage was unsheathed rapidly; the well-defined facial disk, the white throat patch and the mottled ochraceous buff color all appearing in rapid succession until at the age of twenty-one weeks the adult plumage seemed to be complete except for the horns (see Plate IV, fig. 1); these are present although not shown in the illustration, since the Owls flattened them against their heads. These horns or ear tufts attained their full growth at about twenty-six weeks. During this time the weight remained almost stationary; the food being no doubt utilized in supporting the drain made by the rapid feathering.

FOOD HABITS.

The Great Horned Owl is crepuscular in habits rather than nocturnal; but on bright, moonlight nights it might be called nocturnal. It is known to hunt on cloudy days and often, when it has young, it hunts indiscriminately day or night. As to the food of the bird studied by the writer, the particular nest under discussion was observed to be filled with bones and carcasses of various mammals especially rodents. No poultry was found in or about the nest though there were seven farmhouses within a radius of three-fourths of a mile.

From the very first, in captivity, all of these young Owls ate English Sparrows, not infrequently taking as many as eight or ten in the course of a day as well as beef kidney and liver to the extent of one-half pound each. On one occasion when about ten

weeks old Number 1 ate fourteen Sparrows and one-fourth pound of beef kidney at one feeding. Each one showed a decided preference for kidney, caring less for liver. Their appetites were more easily satisfied as they grew older.

Sparrows were easily available through the activities of a licensed trapping station, while dead guinea pigs and rabbits as well as mice and rats were obtained from laboratory experiments. Feathers, hide, and fur were always swallowed, the plucking or skinning process being evidently accomplished in the Owl stomach. These, along with the bones, were rolled into a compact mass and afterwards regurgitated, usually in about twelve hours. When living on an exclusive diet of raw meat from the butcher shop for a few days the birds readily devoured feathers from a plucked chicken in considerable quantities. A taxidermist's laboratory furnished from a Green Heron a tuft of feathers measuring ten inches in length. It was rather stiff but one of the birds swallowed it in a period of a little over one minute.

Sparrows were usually swallowed whole although the head was sometimes crushed or torn off; the body was invariably swallowed head first. It was also noticed that food was taken at definite intervals and if a pellet was about to be regurgitated no food was eaten until it was ejected. The manner of feeding was usually after this fashion: the bird would pounce upon the food, for example a Sparrow, sometimes striking it first with the beak, or perhaps with the talons, but in every case it took the bird up in its beak, lowered its head and grasped the Sparrow with a foot, usually the right. Holding its quarry thus it would glance quickly about for a possible enemy, then it might hop or fly to some other perch, always keeping a sharp lookout. At times this attitude was maintained for as much as ten minutes. If any tearing was done the prey was held down with this foot and after being minutely inspected it was finally swallowed. Guinea pigs were usually torn considerably and the skulls frequently crushed, but not always, as pellets were often discovered containing almost perfect skulls. Aside from this none of these birds was observed to crush bones with any apparent intent. Both beak and talons were possessed of great strength but the former had very little shearing power.



YOUNG GREAT HORNED OWLS.

- Fig. 1. Bird No. 2 (right) 7 weeks; No. 3 (left) 8 weeks.
Fig. 2. No. 2 (right) 8 weeks; No. 3 (left) 9 weeks.
Fig. 3. No. 2 (left) 9 weeks; No. 3 (right) 10 weeks.

Surplus bits of food were sometimes left lying where dropped but more frequently they were carried to some corner and often covered with sticks or other refuse, later to be brought out and sometimes eaten but as a rule they were pulled about, played with, hidden somewhere else and finally discarded as if forgotten.

The pellets were usually coated with a thick layer of mucus and never contained any other material save feathers, hair, fur, and cleanly polished bones. Neither muscle, cartilage nor tendons was ever found attached to any pieces of bones. The latter, however, were never corroded in any way and had evidently never been acted upon by the digestive juices. The spongy epiphyses were sometimes found collapsed and broken but this apparently occurred before swallowing. Microscopic evidence showed that hair and feathers were in no way affected by the digestive juices, although the quills of large feathers were always splintered and rolled together. On a number of occasions pellets were found that contained hair of two different colors or hair and feathers in which the masses were not mixed at all but were very sharply delimited, indicating that two portions swallowed at different times were not mixed together. If a mouse and a bird were fed at the same time the fur and feathers came up mixed in the same pellet, but if fed separately at an interval of a half hour the fur and feathers appeared in the same pellet but distinctly separated. This was also true of animals of the same species but different in color. The literature gives no solution to this problem of pellet formation and study is to be continued along this line.

None of the captives had any occasion to kill their own food. Numbers 2 and 3 lived in a shed during most of the period of captivity with two Short-eared Owls which were, to the best of the observer's knowledge, never injured intentionally by them, although they readily devoured one of the Short-eared Owls which died from another cause. Widmann¹ mentions a case of a captive male eating its dead mate; he also states that a Crow lived with the pair for about a year and was unharmed. One incident is given by Baird, Brewer and Ridgway,² where a captive female killed and ate its mate.

¹ Birds of Missouri, Tr. St. Louis Acad., XVII, No. 1, pp. 110-112.

² Hist. N. A. Birds, III, p. 67.

CALLS.

The first manifestation of any call given by the four Owls was a hiss very frequently employed even when the birds were first taken. When four or five weeks old a shrill, short "yeep" similar to that of a young chicken was given which was evidently expressive of recognition or interest. Numbers 1, 2, and 4 gave this call rather persistently. Another call correlated with anger and excitement might be described as a longer and more quavering one, similar to the long-drawn night call of a Screech Owl, but more harsh and staccato. This was noticeable at the age of seven weeks whenever the birds were disturbed. The only other distinct call recognized was the characteristic hoot. Number 1 displayed this only a few times and then it was very immature, the note being shrill and high pitched. Number 2 began its attempts at hooting at five and a half months. By the age of six months it was able to hoot in rather characteristic fashion although volume was lacking. A month later it was responding to the steamboat whistle of a switch engine which regularly blew about nine o'clock each night; each blast from the engine brought forth an answering hoot. Number 3 was not inclined to hiss frequently and was seldom ever heard to give the "yeep" call. It was never known to hoot or even attempt it. It also gave the scream of anger less often than Number 2. Number 4 was very similar to Number 2 except for the hoot and it had not reached the age for that when liberated.

THE EYE.

The eyes of Number 2 at the age of three weeks showed a washed-out pale yellow iris and a milky cornea; Numbers 1, 3, and 4 still showed this to some degree at the age of five weeks. This corneal opacity did not disappear completely until the Owls were six weeks of age, and Fig. 3, Plate IV, shows how clear the eye later became. The iris gradually became more highly saturated until it reached the chrome-yellow stage at about two months. The same observations were noted on each of the four Owls as those mentioned by Coues,¹ viz., that the iris was entirely under

¹ *Birds of the Northwest*, pp. 302-303.

the control of the will instead of being automatically dependent, as commonly supposed, on the stimulus of light. Each Owl could readily contract or relax the quivering iris in accomodating its vision to different objects or different distances; and the two irides could move independently of each other. The birds often looked at something with one eye partly closed; Number 3 doing this more frequently than the others. Usually, on such occasions the pupils differed in size, but in all stages of contraction and dilatation the pupils remained circular.

Whenever the pupils were much dilated either from anger or some other cause, the irides (especially in the chrome-yellow stage) took on a reddish tinge. This was no doubt the result of capillary dilatation,—the dilatation of the pupils giving the blood vessels in the irides more chance to distend.

The eyesight was keen even in broad daylight, although the bright sunlight was apparently irritating and caused ciliary constriction until a pin-point pupil resulted. It was noticeable, however, especially under the ages of five to six weeks, that the eyes were quite sensitive to strong light. Number 2 when under that age would seek dark corners and Numbers 1, 3, and 4 did so to some extent even at the age of five and six weeks. When older they all preferred a shaded spot to the glare of the sun. Number 1 watched the buzzing of a fly about a basement room where the light was less than 1/10 foot candle intensity; when out in the bright light of the noon-day sun, it also followed the movements of a dog a block away and at another time it watched the flight of a Robin from a distance of 300 feet.

All four of the Owls seemed to enjoy watching the outside world from the open side of the shed. They would perch there in the daytime as well as at night. It was no unusual occurrence for them, especially Number 2, to catch sight of motion at the windows of the house forty feet away; these motions were caught equally well from the second and third stories as from the first.

All but Number 3 frequently displayed a movement of the body from side to side when looking at something. This was most apt to occur when the object was stationary or when something excited the curiosity and they were not able at once to recognize it. This may have been due to retinal fatigue or it may have been

an effort to get a different angle of vision; more probably it was the result of both. Banks¹ mentions this same motion on one occasion when the captive Owl was about to attack a cock placed in its pen and he comments that it appeared to be calculating distance. This same reaction was manifested by Number 1 when a flash-light was flashed in its eyes; it probably was an effort to see into the darkened area behind the light.

The acuteness of vision is further borne out by Coues.² He noticed his two fledglings follow the motions of a grasshopper or butterfly flickering several yards up in the air. On one occasion they watched, facing the glare of the sun, a pair of White Cranes floating in circles a half mile high. Our observations confirm Coues, that these birds have a very acute vision. The eye, however, seems to be adapted for movement and contrast rather than for discrimination as evidenced by the fact that each of the four Owls would seize its own wing if it happened to pass the line of vision.

This reaction to contrast was quite marked at an early age in case of Numbers 1, 2, and 4. If a dark dress with white collar and cuffs was worn near any one of them, that bird would at once begin pulling at the white area with its beak; a white shirt front exposed by an open coat would also bring a like response, the Owl running its beak up and down the shirt front along the lines of contrast formed by the edges of the coat. At different times it spent as much as ten minutes on this problem. Color did not seem to affect any one of them unless the element of contrast was great enough in light and dark. Number 3 showed interest to some degree but it never responded to anything as did the others; its nature or disposition was entirely different.

THE EAR.

Our observations verify the claims of acuteness of hearing in these Owls. It was almost impossible to surprise any one of them in the shed although the approach was made as cautiously as possible and from the side where no glimpse of the observer could

¹ Auk, 1884, pp. 194-195.

² Birds of the Northwest, pp. 302-303.

be obtained. Not only was it possible for them to hear the slightest sound but they could readily localize it. Experiments were made where the observer, concealed, gave various sounds and each time the direction was detected. A tapping on the attic window when one of the captives was perched at the open side of the shed invariably brought a response, the one in question focusing its vision at the origin of the noise.

The horns or ear tufts do not seem to be a part of the ear proper. So far no statement as to their exact function has been found. All of the captives showed a control over these tufts, raising or lowering them at will. Are these tufts in some way connected with the muscular control of the ear valves or are they merely a part of the protective adaptation of this species? These questions remain for further investigation.

SMELL.

The sense of smell has not been investigated in this study as thoroughly as it will be in the future. Such observations as have been made seem to bear out the statement of Bolles (1892). He made tests with fumes of camphor, ammonia and other unusual and disagreeable odors but got no reaction unless the fumes were strong enough to affect the breathing or to irritate the eyes. His captive could be ever so hungry and yet never suspect the presence of food if the latter was carefully covered so it could not be seen. He further states that it disliked putrid meat but that it always tasted it before rejecting it. This last was also true of the four Owls observed in this study. Bolles concludes that he found no satisfactory evidence of olfaction of a high degree of acuity. Further experiments will have to be completed before this study confirms this verdict as absolute.

PERCHING AND ATTITUDE OF REPOSE.

The talons are singularly hooked, acute, and highly retractile, and the outer toe opposable, but it was unusual for any of the four captives to demonstrate the opposability of the outer toe. Only on one or two occasions was it ever noticed. The ordinary way of perching was with three toes in front and one behind. This

was used to a large extent when clinging or trying to climb. When standing the claws were as a rule spread. From the very first the talons possessed great strength and this increased with age, prehension being well developed at the early age of three weeks. A grip around the finger was sufficient to cause pain even though the nails were not piercing. When full-grown the pressure from the claws would be equivalent, if not greater than, that of the hand of a strong man. It was almost impossible to open the closed claws. Each one of these young Owls seemed to like sitting back on the hocks with claws closed; that part of the leg was kept rather bare of feathers for this reason. When perching the common attitude was with the three toes hooked over the perch in front and one at the back and when entirely quiet or at rest the talons were usually closed, the body resting on the tarsus extended along the surface of the perch. At such times the head faced toward the front with both or possibly one eye closed or both wide open.

REACTIONS OR BEHAVIOR.

From the time of the capture of Number 1 until the age of eleven weeks no restraint was put upon its freedom. It roamed about the premises; climbed into dark corners under a shed roof; hid under the porch or perched in some tree. It would come in response to a high pitched call of "woo, woo, woo," long drawn out. If one talked to it in a gentle, soothing tone it would give a series of soft, quavering notes and nestle closer to the speaker. When ten weeks old it would sometimes fly as far as a mile; doing so by stopping intermittently to rest. It would be gone an hour or even a half day but it always came back. It did this one day when a flock of Crows were in hot pursuit; they seemed not to confuse it in the least. One night after its freedom had been taken away, it escaped from the shed, but instead of flying away, it came and perched on a ladder on the porch where the light from the open door was brightest. When approached it stepped upon the extended arm and submitted to capture without any protests.

After it had reached the age of about twelve weeks or more its talons had become so powerful in grip as well as piercing that heavy leather gloves were used when it had to be handled. How-

ever, there was never any occasion when it seemed to wound intentionally. It appeared to take a dislike to the gloves. These were often thrown down in its shed for ready use. Time after time, in fact every time that they were so left, the Owl would hide them in some corner or under the cushion of an old wicker chair. Again it would drag them through its pan of water and leave them soaking wet on the ground. This might have been partly an instinct to play but since it never did the same with other articles left lying about it would seem to indicate more of a dislike. Bolles (1892) mentions a captive Snowy Owl that showed great antipathy for a piece of cloth that was used for covering its head when the Owl was taken out into the open.

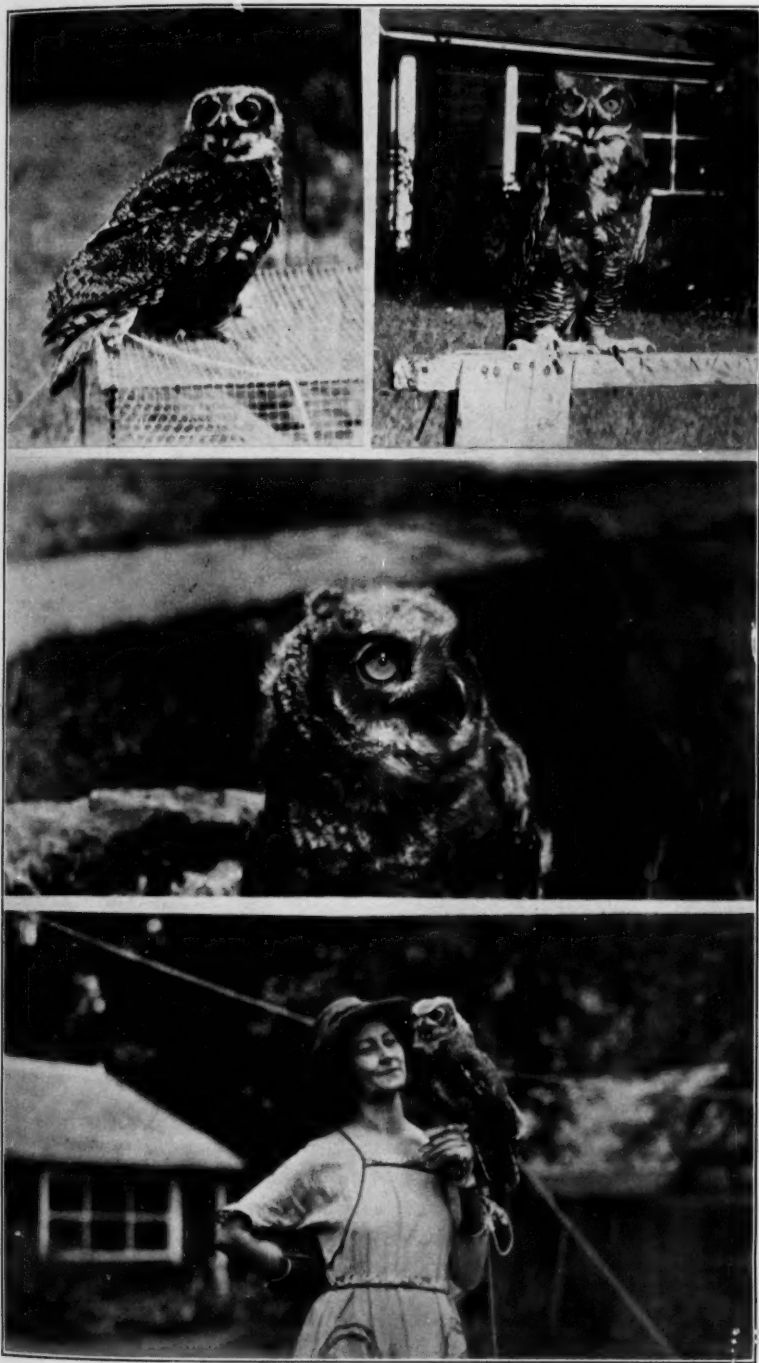
When Number 1 was taken out of the shed for exercise it would crouch low as birds of all kinds gathered and scolded, some even darting down for a swoop at it; its mere presence was a signal for all other birds to make an attack. At such times it showed some excitement although it might have been merely an effort on its part to get away from its enemies; this was shown by its flying up to the roof of the house or into a tree. Often when trying for some destination like that it would find itself brought to a dead stop by the rope attached to a leather band on one leg. It would invariably look back as if puzzled and often make another start; after several efforts it would give up until it was brought back and the rope's length was again available. A rather sharp instinctive response always followed the blowing upon the back of its head in imitation of the air current produced by the swoop of a bird; this was evidently a protective reaction. All of the others acted in the same manner with the exception of Number 3, which did not show quite the same reactions or rather it did not manifest them as often. When from an unseen source the call of a Screech Owl was given, Number 1 invariably localized the sound at once and made an attempt to gain sight of the one giving it.

Number 2 when but three weeks old showed a decided tendency to play. In its awkward way it would seem to measure off on the floor a certain distance and then jump; or it would sedately walk or rather wobble over to the stairs, scrutinize them carefully and then with the aid of the wings hop them one at a time, each time investigating the one just above. Its maneuvers resembled those

of a small boy. When a mounted bird was placed near by it would look at it very closely for a time and then lose interest; there was no contrast nor motion to hold its attention. Like Number 1 it was always on the lookout for a dark corner where the light was not so intense; this was true even of the artificial light at night when the bird was still very young. It was a friendly Owl and made friends with the two Short-eared Owls; not infrequently it would be found sitting or perching close to the side of one of them watching the outside world from the open front of the shed. Its overtures to Number 3 were not encouraged until after both were well grown and then there was only a very formal relation between them. When Number 3 first appeared on the scene Number 2 wobbled over to get acquainted. Its advances were repulsed repeatedly until finally Number 2 seemed to lose its good nature and became apparently so disgusted that it could do nothing but clap its beak; a series of claps following as though it could not stop. It finally turned its back to Number 3 and wobbled away, clapping as it went, and made no more advances for some days.

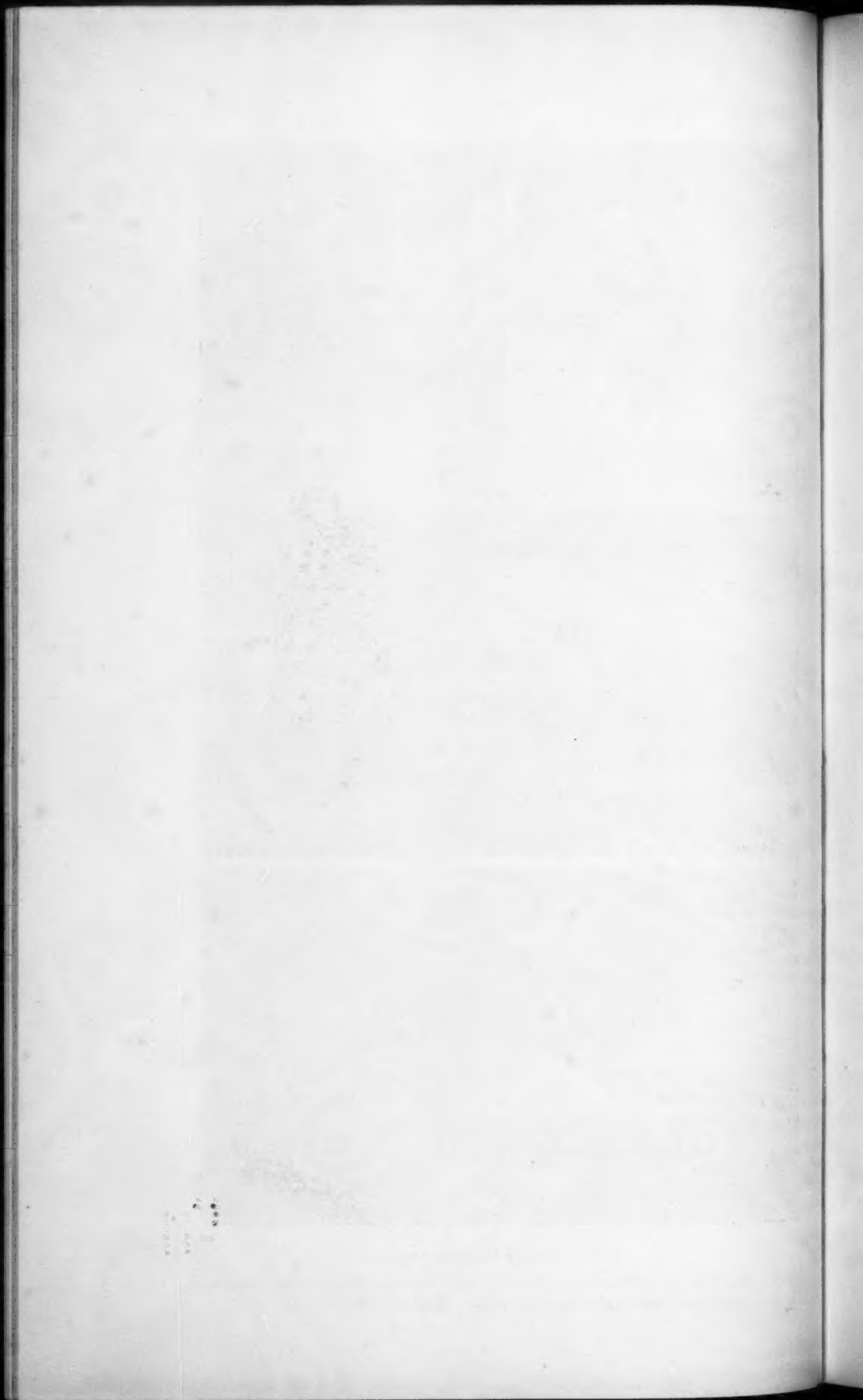
Of the four captives Number 2 was by far the most gentle and most easily handled. Usually if the others were quiet and did not get it excited no trouble was encountered when it was to be weighed or measured. And if it did become frightened it was, as a rule, calmed by talking to it in gentle tones and allowing it plenty of time to step upon the outstretched hand. At night when a light was in a second floor room facing the shed Number 2 would perch at the open front and begin a "lonesome" call as if to attract attention. If spoken to it would invariably answer.

Number 3 was altogether a different individual from Numbers 1, 2, and 4. All three of these had good dispositions and seemed alert and interested in everything; but Number 3 was savage and surly from the very first. Its favorite reaction to feeding and to experiments was to sit back on its haunches or lie flat on its back and attack with claws and beak. All efforts at teaching it to behave differently were futile. Its ferocity was met by various punishments. When it struck at the observer with claws, a rod was manipulated so that the talons closed about it. From this the Owl was suspended head downward. Neither swinging back and forth nor the deluge of a stream of cold water ever loosened its



YOUNG GREAT HORNED OWLS.

Fig. 1. Bird No. 2, at 20 weeks. Fig. 2. Same, showing Horn-Tufts Developed.
Fig. 3. Bird 8 or 9 weeks old showing cornea. Fig. 4. Bird No. 2.



grip. If the attack came from its beak a hot poker or lighted match received the assault but never stopped it. Holding its feet and pinioning the neck to the ground was likewise ineffective as well as boxing it to one side with enough force to upset its balance. It could be subdued for the time being but the process had to be repeated; the degree of severity of the punishments varied with the interval of time that followed each one. It seemed to remember but its savageness was not to be conquered. It also recognized the observer, as did the other three Owls. As it grew older, feeding brought the fighting response less frequently, providing no stranger attempted to perform the task. Whenever it was perched overhead, care had to be used to prevent an attack; sometimes it would fly directly at the observer. This was attributed partly to fear and dread of the touch of a human hand. Nevertheless there was always a certain viciousness about it that led to the supposition that it really desired to fight. Whenever one of the other Owls manifested any inclination to fly at the observer it was done in a fashion that plainly showed it was no direct attack, but merely a getting somewhere because of excitement or fright.

Number 3 was always surly, sullen and morose. Its responses never came as freely as in the case of the others. These facts along with its larger size and different coloring led to the belief that it was a female and that the others were males. When it came time for the placing of a band on its leg for identification it took all the force of two adult persons to hold it while the third did the banding; it was then full-grown.

Number 4 seemed more active at the age of five weeks than any of the others; it climbed higher and made better use of the perches. Like Numbers 1 and 2, it was always docile.

All of the Owls except Number 3 spent no little time playing with white rags hanging in strips from the roof of the shed. This was done after observation showed their keen interest in light and dark areas. If a quick, sudden movement was made in the direction of any one of them it brought a fluffing out of the feathers, a hiss, and clap of the beak or a series of claps and an effort to strike. But if the approach was made cautiously, giving time to puzzle the matter out, there was practically none of this reaction except with

Number 3. A surprise would often bring the clapping of the beak and Number 2 would often hoot when taken unawares. All of them would fluff out to a mass of feathers a yard wide (wings being pushed forward and dragging the ground), sway from side to side, snap the beak like a pair of castenets, and open and shut the eyes, all the while contracting and dilating the pupils in a way worthy of a Chinese dragon.¹ Possibly this attitude affords as much protection as does the one in which they assume a sleek, slender, upright position with the two tufts erect in the form of a snag or broken limb.

Each of the Owls revolved the head, describing three-fourths of a circle when attempting to keep something within the line of vision. Anything unusual when carried into the shed caused them more or less excitement. A stick, broom-handle or anything long and slender when pushed toward them threw them into a panic; which was especially true when it was moved along the ground in front of them and in their direction. This was manifested even at the age of three weeks. It was possibly some instinct of fear, though whether it had any connection with snakes was not determined. All the birds liked to bathe, although Number 1 did so most frequently, taking a daily five minute plunge. With the exception of Number 3 each liked to have the back of its head stroked.

Numbers 2 and 3 of this study showed no inclination toward courting; nor did Number 3 make any attempt at nest-building although material and a cavity were provided by way of inducement. This led to the supposition, not yet fully confirmed, that perhaps there was no mating until the second year, but that it might be possible to get them to breed in captivity providing the right sort of food in proper amounts was supplied along with favorable conditions. The observations of Bolles (1892) and Banks (1884) seem to confirm this possibility. Banks also notes the same behavior in regard to the pellets as was found true of all the four Owls in this study. Namely, that at the time a pellet was about to be ejected the bird seemed almost ill; sitting quietly and taking no food until the regurgitation took place and then

¹ Bolles, *Pop. Sci. Monthly*, XLI, pp. 313-328.

it was all bright and ready for its meal. His captive also manifested the same tendency to hide surplus food.

Opinions differ as to whether Great Horned Owls can be tamed. The behavior of Numbers 1, 2, and 4 would lead to the belief that some individuals could easily be tamed. While no effort to tame was made in the case of these three, they showed gentle dispositions that could easily be cultivated. (Pl. IV, fig. 4.) As far as Number 3 was concerned the natural conclusion is that there are some individuals of the same species that are not easily if ever tamed. There are individual differences among birds as well as among members of the human race.

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NOTES ON TWO GROUND-NESTING BIRDS OF PREY.

BY CHAS. A. URNER.

WITH PHOTOGRAPHS BY T. DONALD CARTER.

Plates V-VI.

DURING the breeding season of 1923 I had the good fortune to find on the salt marsh near Elizabeth, N. J. (in fact largely within the limits of that city) five nests of the Short-eared Owl (*Asio flammeus*) and two nests of the Marsh Hawk (*Circus hudsonius*). While my observation of the histories of these seven nests and their contents was very incomplete, being limited to visits at irregular intervals, some of the facts recorded seem of general interest. Those relating to the Short-eared Owl supplement previous notes on local nestings of that species in 'The Auk,' Vol. XL, No. 1, p. 30, and Vol. XXXVIII, No. 4, p. 602.

THE SHORT-EARED OWL.

A number of Short-eared Owls survived the 1922-23 hunting season on the broad salt marsh lying between the cities of Elizabeth and Newark, N. J., and I had hopes of discovering some of the 1923 nests before the eggs were laid, and of observing their con-

struction. But in the spare time at my disposal I found the job one of extreme difficulty. Early in April pairs of the birds were found frequenting certain areas on the marsh, but they seemed only casually interested when these areas were hunted over and hours of tramping and still-hunting brought no results. On April 7, I believe I was close to one nest. An adult followed me about at a distance, soaring high, but would not come close, nor did it call. On April 14, I found seven adults, but no nests, in spite of arduous hunting over the spongy surface of the marsh.

The First Nest.—On April 28, I discovered my first Owl's nest of the season, containing six eggs, one badly soiled, two slightly so, and three clean. The nest was on the ground in a small patch of standing salt hay that had escaped the prevailing winter fires. It consisted of a thin layer of dried grasses, barely half an inch thick. I had seen an adult Owl flying about the general locality and had spent hours in endeavoring to trace it to its nest. It showed no concern. Finally I withdrew and after it had soared about for an hour it made a shivering dive to the ground. I marked the spot but found no nest in the vicinity. Discouraged I struck out for some more fruitful area and I had gone some distance when an Owl arose, rather wildly, from a nest some distance before me. Neither the bird from the nest nor the other in the air called, though one did some exhibition diving, volplaning with quivering wings, checking itself each time well above the ground. The sitting bird, when flushed, probably purely through accident, carried one of the eggs in its feet or between its legs as it left the nest, dropping it unbroken on the grass several feet away. The actions of these two birds were very different from those observed in previous years when nests containing young were approached. Certainly in this instance their behavior added to the difficulty of locating the nest.

On April 30, a high tide flooded much of the marsh and inundated the nest. The high water continued for over a week and when I was able to visit the site on May 11, I found the nest empty. Some time later, within one hundred yards of the nest I found the broken remains of one egg. Two Owls, probably the adults, were on May 11 not very far from the old nest, but though I hunted that portion of the marsh nearby which had escaped the flood I could

find nothing to indicate that the birds had rescued any of the eggs.

The Second Nest.—On May 5, while much of the marsh was still under water from the April 30 flood I found, fully a mile from the first nest, in an unflooded portion of the meadow but not far from the inundated section, my second Owl's nest. It contained six uniformly dirty eggs, one just pipped. The sitting bird did not leave the nest until I was about to step directly upon her, and she then flew off without apparent excitement. Nor did the mate manifest much concern. He seemed indifferent, acting about as did the one found the previous week, though he indulged in no aerial dives. The nest, if such it could be called, was on a bare spot very lightly covered with dried grass, but no more than was found elsewhere about it. It was protected on two sides by standing dried salt hay.

On May 11 this nest contained four young and two eggs. At my approach the adult not on the nest made more excited demonstrations, uttering a whine (a note not heard before by me), but none of the usual distress notes. The female sat close with ears erect. I was struck by the appearance of her eyes, as she sat with her back to the sun, the black pupils so expanded that the yellow iris could hardly be seen, in striking contrast to the eyes of the mate who, as he finally alighted facing the sun, with feathers roughed and wings extended in a very belligerent attitude, showed the black pupils as mere dots and the eyes mostly yellow.

When the female finally arose, close to me, she knocked two young birds two feet clear of the nest, but without apparent injury. They were pink-skinned with inconspicuous buffy down. The largest, probably from the egg pipped on May 5, was about $3\frac{1}{4}$ inches long, with eyes shut. The three others were of fairly uniform size, about $2\frac{1}{2}$ inches long.

On May 18, my next visit, the nest contained five young Owls and an unhatched egg. The young birds had grown well. Four showed quill pin-feathers an inch long in the wings, and measured from $5\frac{1}{4}$ to 6 inches in length as they squatted in the nest. They were well covered with down. The fifth bird, hatched since the 11th, was $4\frac{1}{2}$ inches long, having apparently made a more

rapid growth than had the first bird hatched during its first week's existence. Both parents showed more concern and one, probably the male, as I bent over the nest swooped down twice and struck me on the hat with a resounding thump, leaving claw marks from which my scalp was fortunately protected. One called repeatedly the familiar "yak" in series. Pellets about the nest contained the remains of both mice and birds and there were some loose feathers of small birds. The nest was filthy with excrement.

On the next visit, May 26, the nest was empty except for the unhatched egg, the excrement and pellets, and a few Red-wing Blackbird feathers. The parents were not in sight, nor were the young. Finally I found, a few feet from the nest, in a shallow hole, a single young bird, fat and healthy, well covered with down and with wing quills fully one inch long. In its crouching position it measured $6\frac{1}{2}$ inches long, and it snapped its bill loudly when approached. Mr. T. D. Carter of the American Museum of Natural History, accompanied me. We handled and photographed the young bird, evidently the youngster of the brood, but the parents did not appear. Finally we flushed both old birds fully one hundred yards from the nest, but we were unable to find the other young which had apparently retreated to more favorable hiding places far from the nest. The parents, even when flushed, acted very differently than on my previous visit. One flew off without a sound. The other called but would not come near, hovering high up. No added interest was shown when we handled the young bird. I could not fully account for the difference in behavior unless the bird was awed by the two persons and the camera, or had learned to consider my visits harmless. But this would not explain its failure to be on guard as previously and its failure to appear as we approached the nest.

The adults were observed about this locality for several weeks following, but the young, evidently securely hidden, were not found again. These young birds, as appears customary with the species, remained in the nest for about two weeks, walking off to more secluded and more sanitary surroundings after that period. Considering the condition of their nest after two weeks' occupancy, instinctive love of birthplace would have to be uncommonly strong to hold them longer.

The Third Nest.—On June 8, on a portion of the marsh that had escaped the early May flood and about half a mile from the site of the first nest discovered, I found a third nest. It had recently contained young birds, judging from its littered condition. It was fully one-half inch thick, composed of dried grasses and weeds, and similarly located in standing grasses. Three adult Owls were about but I could not locate the young. In my search for them, however, when less than fifty yards away from the empty nest, I came upon another Owl's nest.

The Fourth Nest.—This nest, from which the sitting bird flew, was arched over with growing grasses. It contained three young and seven eggs. The young were small, one about $3\frac{3}{4}$ inches and two about $3\frac{1}{4}$ inches long,—only a few days old. The nest, of dried grass, was well formed though not so bulky as the two nests found the previous year. The adult Owls found here were not very demonstrative. One bird called frequently the usual "yak," but the others after calling a few times settled nearby looking on.

On June 16, my next visit to this nest, it contained eight young ranging in length from $2\frac{1}{2}$ to 6 inches, and one bad egg. The missing bird was probably the oldest which had left for less crowded surroundings. One young bird had evidently just come from the egg, making a difference of fully ten days between the oldest and youngest in the brood. The five smaller birds all showed the "egg-tooth" as a small white protuberance near the tip of the upper mandible. It had disappeared from the bills of the three larger birds. The activity of the young bore no direct relation to their size. The oldest was the only one that snapped its bill, but it was otherwise sluggish. In fact all were sluggish except the fourth, a medium-sized bird measuring $4\frac{3}{4}$ inches long. This youngster called continually a peeping note (the only young Short-eared Owl I have ever heard call) and walked about making a ridiculous but very confident figure, perfectly secure on its feet. Apparently some young of this species acquire ability to walk when about a week old. The old birds flew about calling but were not at all aggressive.

I did not visit this nest again until June 30. It was then empty save for the unhatched egg and one pellet. One adult flew about

and was very demonstrative whenever I approached the nest but I could find no trace of any of the nine young or the other adult. I went about locating them in a systematic manner, starting at the nest and walking round and round in narrow but widening circles until I was over one hundred yards from my starting point. I hunted carefully but to no avail. I felt confident the birds were somewhere in the vicinity but they had evidently wandered well away from the old nest.

The Fifth Nest.—Another very interesting brood I found also on June 8, making three nests of the species located in one afternoon. Over a mile from the previously described nest I came upon an adult Owl which was very noisy and demonstrative, tumbling from the air and lying prone on the ground with wings outstretched, squealing much as did the birds found nesting by me the two years previous. After a long hunt I found the mate. She flew off calling, leaving five young, the smallest apparently helpless and with eyes hardly opened, the five ranging in length from $3\frac{1}{2}$ to $6\frac{1}{2}$ inches. The four larger birds were fairly lively and all looked well fed. Their ages apparently ranged from about five to ten days or thereabouts. The few pellets in the nest contained both bird and mouse remains and a mouse minus its head lay before them.

The spot on which these birds were huddled showed no indications of a constructed nest. The ground was partly covered only, with the bent stems of the growing salt grass and that below the birds was still partly green. It looked very much as if the eggs had not been laid and incubated on the spot where I found the young—the grass was not sufficiently bleached to make this seem possible. The question is, were the young birds carried or did they walk to the spot? The smallest seemed incapable of such exertion.

This nest was visited again June 16. By that time the grass composing it was completely bleached, though some of it was still attached to the ground and showing a trace of life at the base. The male Owl was as demonstrative as on the previous week. The female sat on the nest, which was empty except for a large number of pellets and considerable excrement. One young bird, about $6\frac{1}{4}$ inches long, probably the youngest of the brood, was

found nearby and was photographed and banded by Mr. Carter. The older birds of the brood had apparently wandered away from the nest.

The varied actions of these several nesting adults give an interesting picture of the individuality in temperament of different birds of the same species, and also seem to show a cycle in the development of the parental feeling as expressed in the demonstrativeness or pugnacity of the adults when nest and contents are exposed to danger. There was little outward evidence of concern on the part of either sex until the eggs were hatched and, at least in one instance, (that of nest Number 2) the watchfulness and aggressiveness of the male seemed to reach a climax when the young were about two weeks old, diminishing after the brood had left the nest to hide in the vicinity. This waning interest, however, is probably not the rule, but simply another indication of individuality.

It is impossible for me to say how many young from the five nests discovered reached maturity. In three nests nineteen young were hatched, and I am certain there were other nests undiscovered by me. The largest number of adults seen on one day during the breeding season was nine, and this number did not include both adults from all the nests discovered. If hunters can be prevented from wantonly destroying the species on this marsh (a difficult task) it should serve as a supply center for the establishment of other colonies in northern New Jersey.

While the 1923 observations have furnished no certain proof of the possibility mentioned previously by me, that the Short-eared Owl may carry its eggs or young from danger, there is some further supporting circumstantial evidence for this belief in the description of the second and fifth nests found. However the discovery of a broken egg shell not far from the first nest after the flood makes it appear doubtful that that clutch was salvaged.

THE MARSH HAWK.

The Marsh Hawk or Harrier is a regular breeder on the local salt marsh, sharing the same hunting grounds with the Short-eared Owl, and apparently without serious friction. Frequently the two species nest in close proximity and while the Owl some-

times resents too close an approach to its nest by the Harrier, I have never seen the latter attack the Owl. The tolerance shown by the Harrier toward this Owl is not easily explained, for as a rule the Harrier is king of his domain. I have seen him drive off a poaching Duck Hawk from a favored hunting ground with no apparent regard for the vaunted reputation of the latter.

The following facts regarding the nesting of this species I have gathered from observation of three nests, found on the local salt marsh, two in 1923 and one in 1921.

Location of Nests.—The Harrier evidently prefers a less exposed location than does the Short-eared Owl. One nest found was in the center of a large clump of High-tide Bush (*Iva oraria*), and two were even more securely hidden in large beds of thick reeds (*Phragmites communis*). One was on dry, sandy ground, the other two on the wet marsh, occasionally flooded by tide.

Construction of Nests.—Here I found an interesting difference indicating that the Harrier varies the height of its nest with the danger of floods in its chosen location. A nest found on dry ground, above all tide levels, constructed of weed stalks and grasses, nicely lined, was only an inch or two thick. A nest located on the marsh over a mile inland from the shore of Newark Bay, but more or less exposed to floods and unusual tides, was similarly constructed but was about 5 or 6 inches thick. A third nest, found nearer the Bay shore and in a location frequently flooded, was remarkable for its greater size and bulk. It was built of weed stalks and finer material to a height of fifteen to eighteen inches, and it measured over three feet long and two feet wide. It was of uniform construction from the ground up with no indication of a "foreign" foundation. In none of these three nests was there evidence of enlargement from the time of their discovery until the young had departed. Compare this apparent adaptation of nest construction to hazards of location and the apparent lack of a similar faculty in the Short-eared Owl, which must suffer frequent losses by the periodical flood tides, unless the birds do in fact move eggs or young when threatened. Certainly the Owls show no ability to select nesting sites out of reach of the tides, nor to prepare against floods.

Actions of Adults.—There is, as with the Short-eared Owl, some

difference in the actions of individual Harriers when the nests are approached, but the actions of each individual observed here appear to be more constant. The male Harrier I have always found a valiant defender of his household and as pugnacious before the eggs are hatched as after. In fact some adults will continue to evidence displeasure when the nesting ground is approached after the young birds are competent on the wing and even in instances when they have disappeared. I saw an instance of this recently when one adult called and approached me as I neared the old nest on August 10, though the young, which had been flying since mid-July, had long since departed.

No one who has stood at a Harrier's nest as the male bird darts to the attack, his long flicker-like roll changing to a thin squeal as he sets himself for the final charge, can suppress a keen admiration for the bird. A charging Harrier in full plumage is worth going miles to see.

I have never known a Harrier actually to strike a human invader though several times birds have come within inches of my hat and all males I have had experience with were tireless in their demonstrations, charging in to very close range, then wheeling off only to charge again. The male I have found the more aggressive, though females feeding young are usually quite bold and noisy.

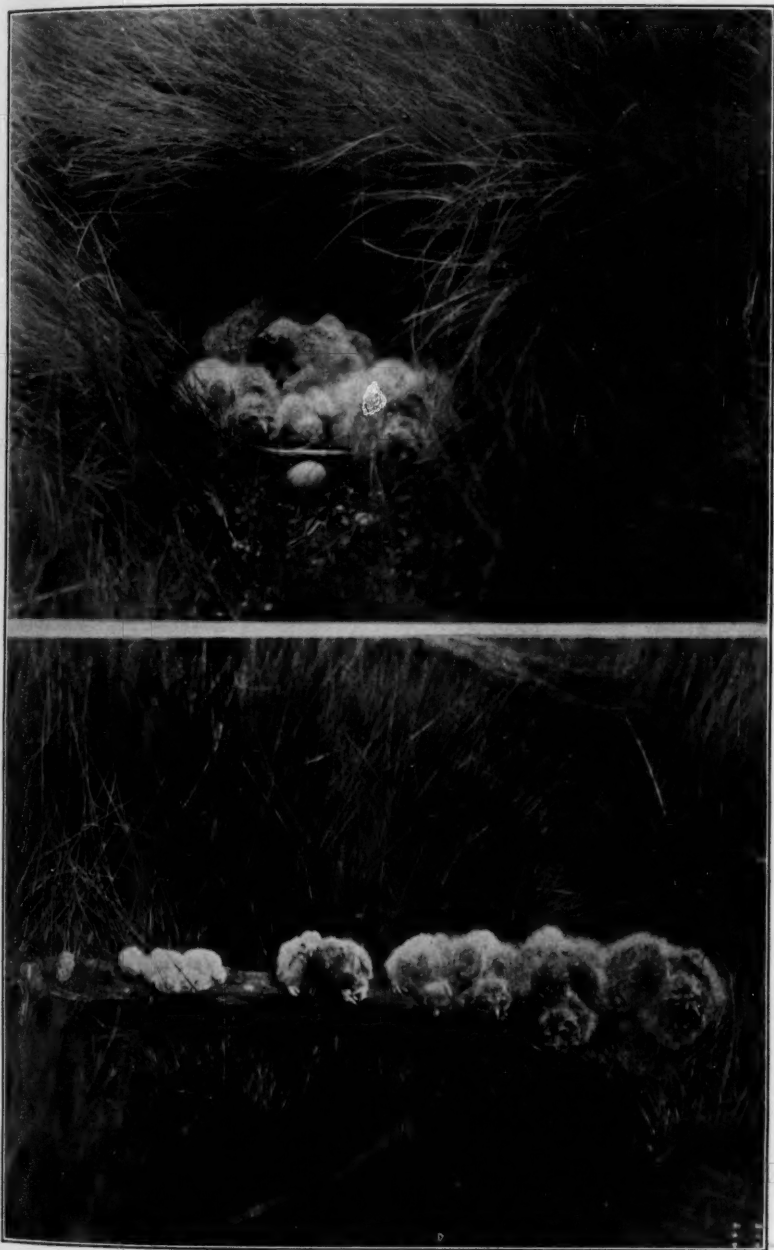
The Young.—I have never found the young Harriers as they came from the egg, but I have found them when apparently but a day or two old. They are then sturdy, fearless, wide awake, active, noisy and hungry youngsters—a long list of adjectives but they deserve them all. One young bird, apparently not over two days old, in a nest with five eggs, two of which were pipped, squealed and came toward me as the nest was approached, using wings and feet as instruments of locomotion and evidently taking any moving object as an indication of food. Its lack of fear, inherited from generations born in secluded nests, made a striking contrast to the actions of the young of some of our precocial ground-nesting birds whose early days are spent in localities exposing them more frequently to danger. The use of the wings as legs to aid in locomotion is an interesting remnant of a well-developed ancestral faculty.

When young the birds are sparingly covered with a light down. They grow rapidly but remain in and about the nest until ready to fly. The time from hatching to flight in the broods I have observed was about thirty to thirty-five days. Frequently the young remain in the general vicinity of the nest for two or three weeks after they have mastered the art of flying. Ability to fly comes relatively slowly and usually some days after the wings and wing feathers are well developed. The young birds are not uniformly courageous, the males I believe the more so, facing the intruder and ready to attack with lightning-like thrusts of the claws whenever closely approached.

The readiness with which the young imitate their parents is worthy of note. On July 7, I visited a brood which had left the nest and learned to fly, though still in the vicinity of the nesting site. They flew in all directions as I approached, uttering an immature peeping call. The adult male turned immediately to attack and I was surprised to see two of the young, probably males, follow suit, flying in very close and making a more or less unsuccessful effort to imitate the long rolling call. The darker backs and wings and more rufous underparts readily distinguish the full-grown young from the adults on the wing.

Nest Sanitation.—There is a sharp contrast between the nest sanitation of the local Harriers and Short-eared Owls, a fact which possibly accounts for the willingness of the young Harriers to remain longer on and about the nest, though cause and effect in such matters are easily confused. During the first three weeks of the brood's existence the Harrier's nest is kept scrupulously clean, but when the birds begin to wander about more or less, spending their time in retreats near the nest, less care is exercised and it is at that period that some interesting information as to food habits becomes available.

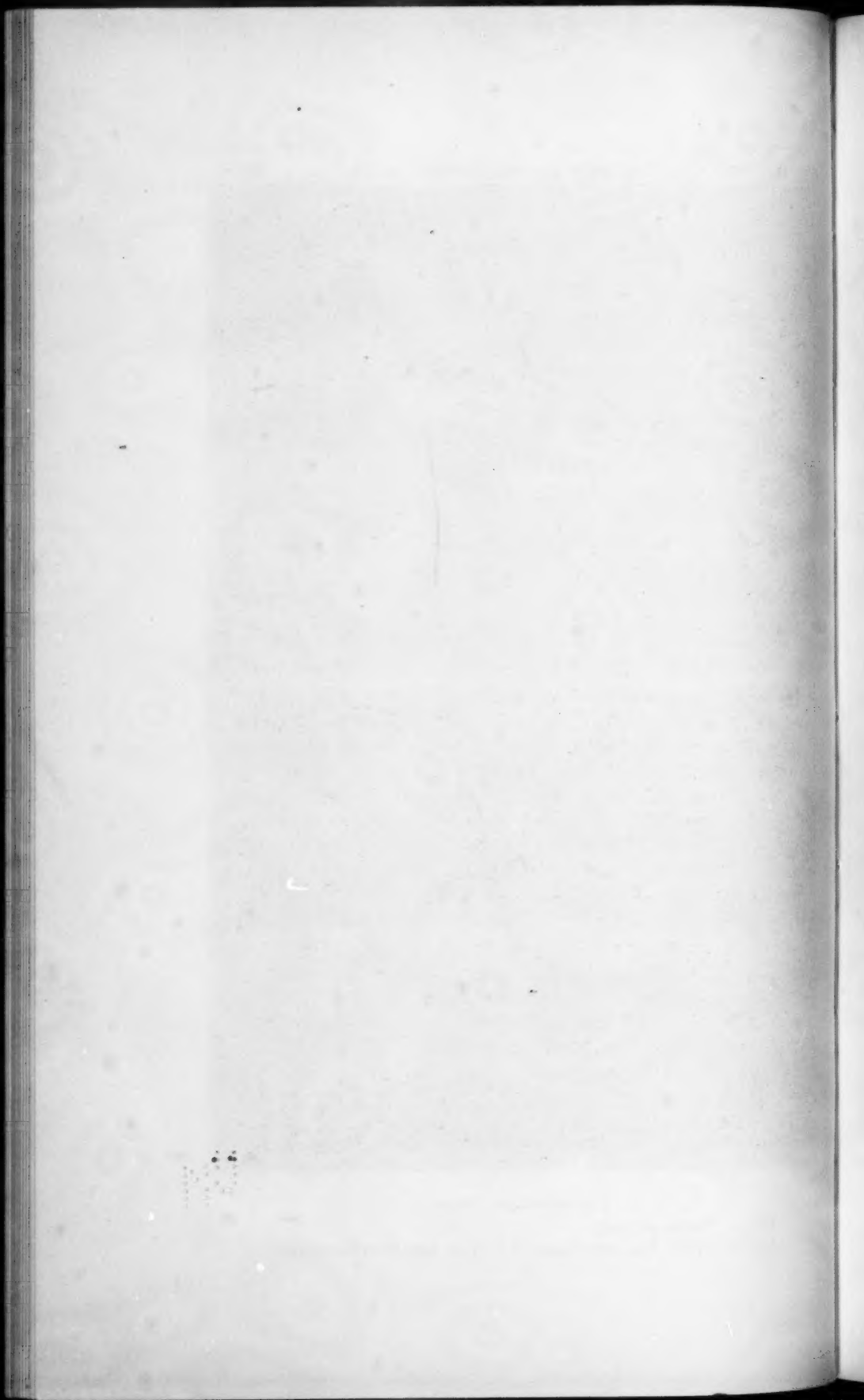
The Young Harriers' Diet.—As the young Harriers grow toward maturity their demands for food become relatively enormous. It is therefore natural that the adults, when called upon to supply these growing appetites, should become bolder and strive to secure their prey in larger units. This is apparently the usual tendency. As far as I can judge from remains picked up in the general vicinity of the nests, mice and small birds, supplemented



SHORT-EARED OWLS.

Fig. 1. Young in Nest.

Fig. 2. Pellet, Egg, and Young of Various Ages from Same Nest.





MARSH HAWK.

Fig. 1. Eggs and One Young in Nest.

Fig. 2. Brood of Young in Nest.



with insects, constitute the principal fare during early life. But as the birds grow, rats assume a more important role, and in or near two different nests I found remains, picked clean, of practically full-grown American Bitterns (*Botaurus lentiginosus*). Now the young American Bittern is no mean antagonist, and the fact that such large birds are actually killed and carried to the nest indicates the calibre of the Harrier as a hunter. I recall, once before in the later fall, flushing a Harrier from the half-consumed remains of an adult Green Heron. This bird had possibly acquired a taste for *Ardeidae* in earlier life.

During the fourth week of the young Harrier's life pellets of fur and feathers, containing some bone, begin to appear about the nest. These pellets are often as large, as compact and as well formed as those of the Short-eared Owls, constituting an interesting similarity between the two species. It is probable that the failure to find pellets about the nests earlier in the young brood's growth is due to the thorough removal of waste by the adults, rather than any change in feeding habits.

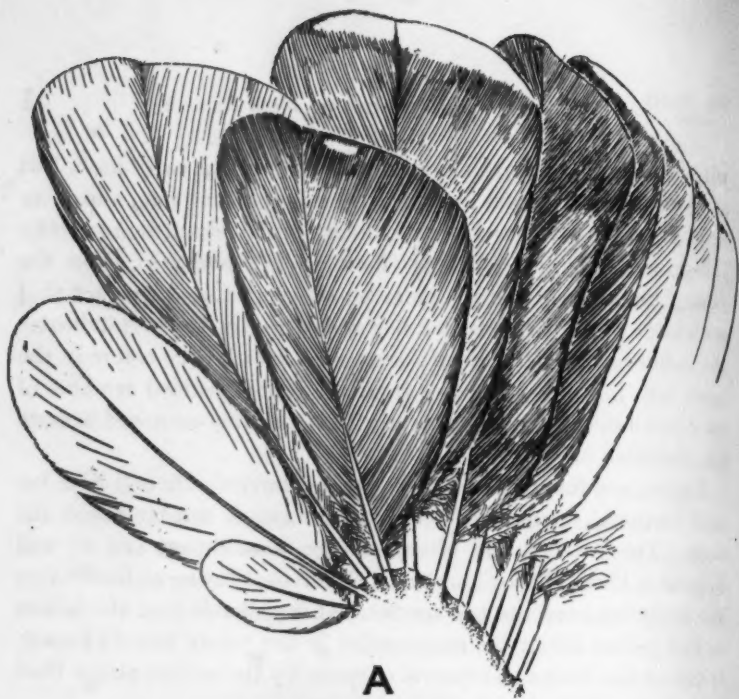
613 Cleveland Ave., Elizabeth, N. J.

THE SECONDARY REMIGES AND COVERTS IN THE MANDARIN AND WOOD DUCKS.

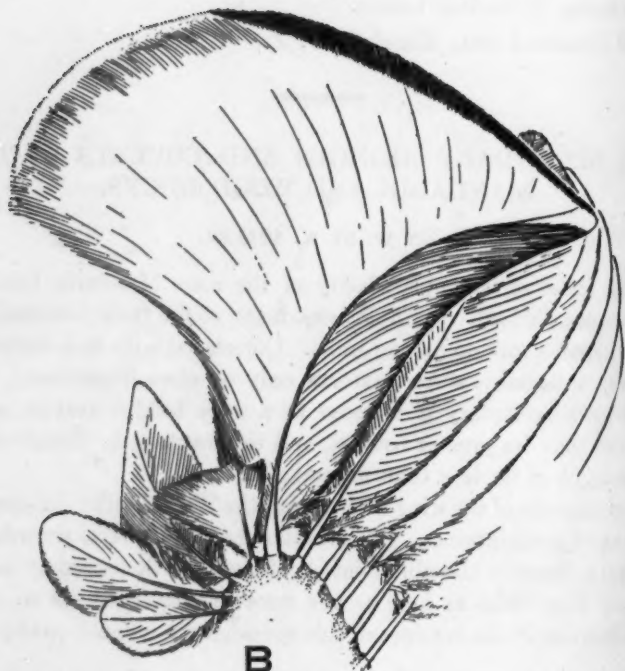
BY W. DE W. MILLER.

THE most striking peculiarity of the male Mandarin Duck is the remarkable sail- or fan-like expansion of the twelfth secondary, an ornament unique among birds. Correlated with this are other equally unusual features, evident only on close inspection. The thirteenth secondary is reduced to a mere hidden vestige much shorter than its greater coverts, and the fourteenth, though twice as long, is of far less than normal size.

Comparison of the wing with that of the Wood Duck (*Aix sponsa*) proves of great interest. In the latter there are several remarkable features, notably the abbreviation of the twelfth secondary which is only four-fifths as long as the remex on each side of it. The peculiarities in the remiges of this species were pointed out by Mr.



A



B

Proximal Secondaries of left wing from above, the coverts removed: A, of Wood Duck (*Aix sponsa*), adult male; B, of Mandarin Duck (*Dendrocygna galericulata*), adult male. In each case the abbreviated secondary (fourth from inner edge) has been raised.

Ridgway many years ago (*Water Birds of North America*, II, p. 12, 1884), but I can find no mention of the reduced secondaries in the Mandarin nor any comparison of the remiges of the two species, and it therefore seems worth while to figure and describe them. Furthermore, the female Wood Duck has a peculiarity of its own in the greater secondary coverts.

In order to correctly compare the abnormal remiges of the two species it is essential that their homologies be determined. For this purpose we may first examine the undifferentiated wings of the females. We find in the Mandarin eleven typical secondary remiges and five inner secondaries or "tertials," which differ in size, shape and color from the others. In the Wood Duck these remiges number ten and five respectively, i. e., there is one less typical secondary than in the allied species. The tertials are plain bronzy-olive, the first one longer and broader than the adjacent secondary, the four others graduated.

We must decide whether there has been an abrupt loss or gain (according to the species) of one of the typical secondaries, or whether there has been a change at the proximal end of the series and the transformation of a tertial into a typical secondary or vice versa.

The longest tertial is so unlike the adjacent typical secondary that I believe any modification of one into the other within the limits of the genus is most unlikely. Moreover, I have examined one female Wood Duck in which there are eleven typical secondaries as in the Mandarin, and in a male of the latter there are eleven in one wing and twelve in the other!

It is fairly safe to assume that the first eleven secondaries of the female Mandarin correspond to the first ten of the Wood Duck and that while the long bronzy-olive outer tertial is the twelfth quill in the former and the eleventh in the latter, yet the two are strictly homologous.

The number of secondaries in the males is the same as in the females and on this assumption it is evident that the remarkable sail-like twelfth remex of the Mandarin corresponds to the eleventh quill of the Wood Duck and in each case it is the first tertial. While these feathers are merely modified inner secondaries, it will be more convenient in the present paper to refer to them as

tertials. To Mr. James P. Chapin I am greatly indebted for the two accompanying figures.

COMPARISON OF THE SECONDARIES IN THE MALES.

The first (distal) nine secondaries are normal in size and shape and virtually alike in the two species though broader in the Wood Duck. In the Mandarin they are bronzy-olive, the last one or two being steel-blue on the outer web, while in the Wood Duck all are steel-blue. In both species each feather is narrowly tipped with white. The next two feathers in the Mandarin are blue like the ninth but lack the white tip, or the tenth may have a very narrow tip. In the Wood Duck the tenth feather, which probably corresponds to the eleventh of the Mandarin and like it always lacks the white tip, differs in having the outer web, which is largely bright coppery red, widening terminally, and the end of the feather angular.

The twelfth quill or sail-feather of the Mandarin is, as already stated, the first tertial, and homologous with the eleventh of the Wood Duck.

In both birds, but particularly in the Mandarin, this remex is much larger than the preceding feather and widens towards the end, but while in the Mandarin only the inner web is expanded, the outer being even narrower than usual, in the Wood Duck the outer web is considerably wider than the inner. In the Oriental bird the outer web of this sail-like feather is violet-blue nearly to the tip, the rest of the feather tawny-rufous with black and white terminal edges. In the American bird the inner web is fuscous, the outer velvety black, showing rich bluish green reflections in certain lights, the tip of the feather pure white.

The second tertial of the Mandarin is a miniature of the first, but the shaft is straight and the tawny inner web degenerate in character. It is a mere vestige ranging from fourteen to thirty millimeters in length (usually about 17) in the few birds examined. The outer web is violet or this color may be more or less replaced by white or fuscous. It is crowded in between the neighboring quills and hidden by these and by its upper covert which is two or three times as long.

Except that the corresponding feather of the Wood Duck is

considerably shorter than the immediately adjacent tertials there is no resemblance between it and the Mandarin's vestigial remex. It resembles its preceding tertial in color and form but lacks the white tip.

The third tertial of the Mandarin, while strikingly abbreviated, is about twice as long as the second. It is obliquely cut off on the inner web, the outer web tapering to an obtuse point; light violet blue, the inner web sometimes with a narrow white terminal edge. In the American species this feather is wholly different and closely resembles the first and second tertials, being of the same length as the first but, like the second, with no white tip.

The last two tertials of the Mandarin are plain bronzy-olive feathers, the fourth a little shorter than the third, the fifth only half as long as the fourth. In the Wood Duck the fourth tertial is about three-fourths to four-fifths as long as the large third one. It resembles the latter in color but is usually duller and is much narrower and does not widen terminally. The last tertial is a small plain feather, sometimes degenerate and shorter than its covert, or twice as long, (considerably exceeding its covert) and firm webbed.

The anomalous relations of the second and third tertials of the male Wood Duck is reflected in the female in which the third feather is often scarcely shorter than the second. In the female Mandarin there is no such approach to the characters of the male but the first tertial is much longer and broader than the others.

To sum up, the first three tertials are conspicuously modified in the males of both species, the first two at least are broad and truncate, and the second one shorter than the first and third. All three of these feathers, however, are much more modified and peculiar in the Mandarin than in the Wood Duck and the difference in size between them is far more marked. Thus while the first tertial of the former is more expanded than in any other Duck, the next one is unique in its vestigial condition. Furthermore, in the Mandarin the inner web of each feather is far wider than the outer, whereas in the Wood Duck the outer is the wider. The remiges immediately adjoining these tertials also differ conspicuously in the two species.

In the male Wood Duck the first and third tertials are equal

and longest, only the last two being graduated, while in all other members of the family at least three are shortened. In the Mandarin, on the other hand, the third is disproportionately abbreviated and actually much shorter than in any other Anserine bird.

As already stated, the Wood Duck has but fifteen secondaries, one fewer than the Mandarin. This is the minimum number in the Anatidae, for of the thirty-six genera examined by me none has fewer than sixteen secondaries, and all but six have more than sixteen.

In certain groups of birds, as the Tyrannidae and Cotingidae, the primaries are not infrequently irregular in length, and this is carried to an extreme in *Tityra* in which the ninth primary is reduced to a vestige between two quills of normal length.

So far as I am aware no such reduction in the length of a secondary has heretofore been recorded in any bird, for which reason the state of these quills in the Mandarin and Wood Ducks is especially notable.

In Mr. Ridgway's note on the male Wood Duck, above cited, he describes the broader, black scapulars as alternating with narrower, more pointed, bronzy ones, which are mostly concealed between the broader feathers. In the fresh specimen now before me I find that the black feathers are the *outer* ones, the bronzy feathers the inner ones. There is no alternation as regards their insertion in the skin but in the normal contracted condition of the humeral tract the feathers naturally overlap in this alternate fashion.

A difference in the greater upper coverts may also be mentioned. In the Mandarin these coverts are of the same bronzy-olive as the other upper coverts and the innermost two are graduated. In the Wood Duck the outer coverts are olive but as they approach the elbow the coverts gradually become green and then violet, with a narrow black tip, and at the same time become actually shorter and broader. The penultimate one, however, is green with no black tip and is slightly longer and narrower than the one distad of it. Thus only the final covert is shortened.

In the female Wood Duck there is a very interesting peculiarity in the upper greater secondary coverts. The four of these coverts belonging to the tenth to thirteenth secondaries are largely bright

red-purple contrasting conspicuously with the adjacent steel-blue and olive-brown. Their chief distinction, however, is that they are much larger than the preceding coverts, particularly that of the eleventh quill, which is considerably longer as well as broader than the more distal coverts. The two coverts proximad of this one are graduated and the one distad of it is also shortened. There is no such modification either in size or color in the male Wood Duck nor in either sex of the Mandarin. In these the covert of the eleventh remex is smaller than the distal coverts instead of larger.

OTHER DIFFERENCES BETWEEN THE SPECIES.

The Mandarin is a slightly smaller bird with a decidedly smaller bill, but the tarsi are actually longer than in the Wood Duck and the wings are fully as long.

There is no backward extension of the bill in a point on each side of the forehead as is so conspicuously the case in the Wood Duck, and the teeth of the maxillary tomia are much less developed and usually invisible from the side.

The very long, narrowly linear-lanceolate "hackles" which spring abundantly from the posterior part of the head and anterior part of the neck in the Mandarin (shorter ones even crossing the fore-neck) are entirely different from the short velvety plumage of the Wood Duck.

In the Mandarin there is a graduated outer series of falcate, pointed scapular feathers, pure white with a broad deep black outer edge (much like those of *Nettion crecca*). In the allied species these scapulars are very broad, rounded terminally, somewhat arched or convex and velvety black with violet reflections.

The central one or two pairs of rectrices in the Wood Duck are broader, rounder at the end, and laterally arched or vaulted instead of flat as in the Mandarin. The upper tail-coverts too, in the latter, are flatter and narrower and there is no special development of the outer ones. In the Wood Duck the several outer coverts are arched downward laterally over the base of the tail, the very broad, loose webs with a tawny shaft stripe. In the Mandarin the upper tail-coverts are usually slightly longer than the lower, instead of the reverse as in the other species.

I cannot confirm the marked differences in the length and graduation of the tail and in the length of the lower coverts described by Ridgway (l. c.) and suspect that an imperfect or molting specimen of the Mandarin was examined.

In the Wood Duck the plumage of the chest is harsh to the touch and under a magnifying glass the barbs are seen to be somewhat thickened subterminally and devoid of barbules. In the allied species the plumage is soft and normal.

The plumage of the upper parts in general is richer, softer and more lustrous in the Wood Duck, violet, red-purple and velvety black predominating, and the bronzy-olive is richer than in the Mandarin. The feathers are larger, broader, and more obtuse, and tend to be convex or arched rather than flat.

The color and pattern of the head (except the crown) and of the bill, the scapulars and the under wing- and tail-coverts, are all very different in the two birds.

In their coloration the females of the two species differ chiefly as follows. In the Mandarin the upper part of the head is grayer, the grayish olive back and scapulars have no red-purple shade, the upper wing-coverts are entirely bronzy-olive with none of the steel-blue or copper-red of *A. sponsa*. On the outer web of the ninth secondary, and often of the eighth also, is an oblique white bar (lacking in one of eight specimens); the outer web of the tenth quill is edged with white (in all but one of the eight birds). The under-wing coverts differ as they do in the males and the crissum also to a certain degree.

The structural differences between the two species, then, lie in the form of the bill and in the very different development or shape of the feathers of various parts, as the neck, scapulars, secondaries, upper tail-coverts and central rectrices. The females show these differences (except in the scapulars) to a certain degree, and, furthermore, in this sex of the Wood Duck there is an unusual development of some of the secondary coverts which are normal in the other species.

The Mandarin is not only unique in the neck ruff or cape and in the form of the tertials, but the wings are of maximum relative length while the bill is probably smaller than in any other freshwater Duck.

The number of rectrices in this group is sometimes given as sixteen. Of the thirteen Wood Ducks examined, eleven have fourteen rectrices, one fifteen and one sixteen. Of the ten Mandarins, eight have fourteen, and two have fifteen. The variation is irrespective of sex.

There has long been a difference of opinion as to whether the Wood Duck and the Mandarin Duck are congeneric or not. They are obviously much more like each other than either is to any other member of the family. Indeed, so distinct are they from any other group that their exact affinities are somewhat uncertain. The natural and usual course therefore has been to keep them together in the genus *Aix*.

In this comprehensive sense *Aix* differs from all other Ducks in the silvery white edging of the primaries, the elegant black and white terminal banding of the vermiculated flank feathers and the very broad, truncate tertials, the second of which is smaller than the third. The lustrous green-and-white crest, the long wings and the relatively long, broad-feathered tail, with long coverts, are also characteristic. Some of these features are present in the male only, others in both sexes.

Ridgway (op. cit. p. 9) has remarked that the Mandarin differs from the Wood Duck "in so many points of external anatomy as to render it extremely doubtful whether the two species should be kept together in the same genus."

They are perhaps as distinct as are the monotypic genera *Charitonetta*,¹ *Arctonetta*, *Nomonyx* and *Lophodytes* which have long been recognized by American ornithologists. Hartert considers the two species generically separable, although there are a number of current genera of Ducks and Geese, including *Charitonetta* and *Lophodytes* that he refuses to recognize.

The Wood Duck, *Anas sponsa* Linnaeus, is the type of the genus *Aix* Boie (cf. Allen, Bull. Amer. Mus. Nat. Hist., XXIII, p. 305, and A. O. U. Check List of N. Am. Bds., 3d Ed., 1910, p. 73).

¹ In this connection it may be well to call attention to a character of *Charitonetta* that is often overlooked. According to MacGillivray (and I can confirm his statement) the trachea has "scarcely any appearance of dilatation at the part which is so excessively enlarged in the Golden-eyed Duck." This refers to the bony labyrinth at the lower end of the trachea.

Swainson's name *Dendronessa* is available for the Mandarin Duck which, if considered generically distinct, will be known as *Dendronessa galericulata* (Linnaeus).¹

*American Museum of Natural History,
New York City.*

NOTES ON THE BIRD LIFE OF NORTH DAKOTA WITH PARTICULAR REFERENCE TO THE SUMMER WATERFOWL.

BY FREDERICK C. LINCOLN.

ITINERARY.

THE following notes were taken by the writer while engaged in official work for the Biological Survey, United States Department of Agriculture, during the period July 2 to August 1, 1921. The trip was made possible through the cooperation of Dr. John C. Phillips, and had as its objective experimental work to determine satisfactory methods for trapping waterfowl for banding purposes.

I arrived at Napoleon, North Dakota, on July 5, and from that date until July 12 made observations and conducted trapping experiments at lakes in the vicinity. On July 12, I went to the town of Turtle Lake, via Bismarck and Underwood, remaining there two days. Leaving that point, my next field of operations was Devils Lake, reached by way of Minot. After examining some of the smaller lakes in the neighborhood, I selected for further operations what is known as Mission Bay, on the south side of Devils Lake, where I camped from July 20 to 27, when I returned to the town of Devils Lake and concluded my activities at Hankinson on the 30th.

The following list of lakes of the Napoleon, Hankinson, Turtle Lake, and Devils Lake regions will simplify future reference to the lakes and sloughs studied:

¹ Most of the older authorities and even Hartert as late as 1915 give *galericulata* as the type of *Aix*. Dr. Richmond informs me that these writers probably follow Gray who, in 1841, gave that species as the type, but that Eyton in 1838 had already designated *sponsa* as the type of *Aix*.

Napoleon Region

Dawson Slough
Goose Lake
Isabel Lake
North Napoleon Lake
Pursian Lake
Round Lake
South Napoleon Lake

Hankinson Region

Carters Slough
Elsie Lake
Figges Slough
Gooleys Slough
Knooch Slough
Mud Lake
Swan Lake

Turtle Lake Region

Blue Lake
Brecken Lake
Crooked Lake
Fresh Lake
Kittleson Lake
Leirbo Lake
Long Lake
Nelson Lake
Pelican Lake
Strawberry Lake
Turtle Lake
Williams Lake

Devils Lake Region

Devils Lake (Mission Bay)
Irvin Lake
Lac aux Mortes
Sweetwater Lake

INTRODUCTION.

In affording breeding grounds for the many species of birds that delight in marsh associations, the northern tier of States of the Mississippi and Missouri River drainages rank second to none in the United States. The great importance of this natural wild-life resource has been strongly attested by the sportsmen, naturalists, and conservationists, who have given ample evidence of their beliefs by opposing (at times through court and congressional action) attempts to drain the lakes and marshes of this region. Previous to the agricultural development of this section, water-fowl abounded there during the summer, Ducks and Geese nesting in the marshes and coulees, and in fall every lake was a vertiable paradise for the sportsmen who were attracted there from all parts of the country by the abundance of game birds. It is therefore obvious that great interest attaches to all conditions that affect these natural reservoirs, whether from natural or human causes.

Previous ornithological work in North Dakota, part by representatives of the Biological Survey, had yielded information that

I naturally used in anticipating my own activities. These data¹ had indicated well-filled lakes and sloughs, populated by large numbers of Ducks and other swamp-loving species. Upon arriving on the ground, however, I learned that the two-year period preceding the summer of 1921 had been marked by a drought of unprecedented severity. Considering the fact that most of the lakes and sloughs are dependent solely upon surface water, the inevitable result of drought conditions will be apparent. A few of the deeper lakes fed by underground springs were, of course, the last to feel the effect of drought, although almost all had been conspicuously lowered, as evidenced by the normal shore lines. The deeper lakes, however, do not have the same ornithological interest held by the more shallow, for it is the latter, together with the sloughs and coulees, that support the marsh vegetation so necessary to the presence of wild fowl. The deep lakes seem generally to have sand or gravel bottoms, and reed or cattail areas, if existing at all, are very small. In the vicinity of Napoleon there are a few lakes of this character, while in the more hilly or rolling country in the region of Turtle Lake there are several of the same type, most of which are undoubtedly of glacial origin.

In striking contrast with even the lowered condition of these, was the state of the shallow marshy lakes which in normal times have supported large numbers of waterfowl, but which in 1921 were either vast expanses of alkaline mud with small areas of open water, or were entirely evaporated and their bottoms baked hard by the sun. Goose Lake was a striking example of this extreme of evaporation, and I was told that two years before it was one of the best lakes in the vicinity for Ducks. As I saw it, there was absolutely no water and but few places where the mud was even slightly discolored by moisture. Nelson Lake was in a similar condition, my journal containing the entry under date of July 14 that it "will probably be entirely dry within another week or so."

¹ There are many papers treating the avifauna of Minnesota, Wisconsin, and the Dakotas, but for comparative purposes I have given particular attention to the one by Mr. A. C. Bent, "Nesting Habits of the Anatidae in North Dakota," 'The Auk,' vol. 18, pp. 328-336, 1901, and vol. 19, pp. 1-12 and 165-174, 1902. In the annotated list of species observed, frequent reference will be made to this paper and to "Life Histories of North American Wild Fowl," Bull. 126, U. S. National Museum, by the same author.

The lowered level of Devils Lake, the largest body of water in the State, while without doubt greatly aggravated by the drought, was not due entirely to this cause. Originally this lake was about 30 miles long with a shore line of great irregularity. So large was it, that a steamboat of moderate size made regular trips from the town of Devils Lake to points along the shore. During the past ten years, however, this body of water has been steadily drying up, so that now it is a series of three or four lakes more or less connected by narrow channels, and the present shore line is almost or quite a mile from the point where the steamer used to dock.

Like almost all other lakes in the State, Devils Lake has no outlet and practically no inlet, save for periodic streams that drain the rainfall from a watershed extremely limited in extent. As a consequence, it is more or less alkaline, while in some of the little bays recently cut off from the main bodies of the lake the water is so stagnant that it gives off an almost unbearable odor.

I am not acquainted with the reasons for the steady shrinkage of this large lake, but locally much credence is given to the opinion that it is due to the greatly increased agricultural activity in the vicinity, particularly dry-farming. It is explained that by breaking up the prairie sods the rate of evaporation has been materially increased, and that this has a direct effect on the level of the lake, which is the natural reservoir supplying subsurface moisture. This theory appears entirely plausible to me, and it may also be applied to many other of the shallow prairie lakes. It is a fact that the lakes most seriously affected are those in comparatively level regions where farming is naturally more extensively practiced than in the more hilly country of the deep lakes.

Some of the lakes that were not entirely dry had areas of open water separated from the normal shore line by wide flats of a most deceptive and treacherous nature. I was early warned not to risk the "alkali flats," and found that it was unwise to disregard the warning. The intense summer heat (the thermometer registered over 100° F. for several successive days while I was at Napoleon), without a particle of rainfall, had dried the surface of the mud and baked it to a semblance of solid ground. Beneath this crust, however, it was likely to be semi-liquid and, judging from my own experiences, very deep.

That the conditions found in the localities visited were not local was indicated in a telegram which I received at Napoleon from Mr. T. W. Magill, the owner of Island Lake, near Rolette in the north-central part of the State, where I had expected to find one of the largest concentrations of waterfowl. Finding conditions in the southern part of the State so unsatisfactory for my proposed work, I was tempted to abandon my itinerary and move to the more northern lakes, but before doing so concluded to wire Mr. Magill and make inquiries regarding the conditions in that region. His reply—"No wildfowl breeding Island Lake, neighborhood lakes all dry"—was ample evidence that I was confronted by a situation not likely to be bettered by a change of base.

The character of these lakes and sloughs varies widely, from clear, open prairie lakes with scant bordering vegetation and considerable depth, to dense and solid marshes of rushes (*Scirpus validus* and *S. robustus*), cat-tails (*Typha latifolia*), cane (*Phragmites*, sp.), wild rice (*Zizania aquatica*), and other grasses; or shallow ponds with extensive flats of the adhesive alkaline mud. While practically all the lakes are at least slightly alkaline, some are strongly so; in fact, there is evidence to support current reports that in some lakes the density is such as to cause the salts to be so heavily precipitated upon the feathers of waterfowl as to render flight impossible. This phenomenon is said to occur only at temperatures so low that lakes of lesser alkalinity are freezing or already frozen over.

Scattered cottonwoods (*Populus*) or large willows (*Salix*) are frequently found in the vicinity of some of the lakes, while the shores, particularly the southern shore of Devils Lake, are well wooded. The trees rarely exceed 50 feet in height and, in addition to those mentioned, consist principally of oak (*Quercus*), ash (*Fraxinus*), boxelder (*Acer negundo*), and aspen (*Populus tremuloides*). Among the shrubs, wild plum (*Prunus americana*), choke cherry (*P. virginiana*), and June-berry (*Amelanchier alnifolia*) are conspicuous. In places, rose, raspberry, and other shrubs, together with poison ivy, form almost impenetrable thickets, while the more sandy areas that marked the old beach lines are frequently covered with stiff stalks of a sumac (*Rhus*), or the sticky stems of the rosin-weed. Pondweed (*Potamogeton*) is

common in some lakes, and while of unquestioned value as a food for Ducks it was the cause of much trouble to me in my trapping experiments. Large masses would be drifted by the winds against the wire netting, frequently jamming the funnels of the traps, and on one occasion breaking the supporting stakes and submerging the wire, which became hopelessly entangled with the long strands of the plant.

The foregoing details emphasize the great need of carefully conserving the remaining breeding and feeding grounds of our migratory wild fowl, and show that unavoidable causes alone are likely so to affect a part of them that their value to the birds will be either seriously impaired or entirely destroyed.

LIST OF SPECIES OBSERVED.

As my work was concerned entirely with water birds, the notes on other groups are incidental, but for the sake of completeness are included in the following list:

Colymbus nigricollis californicus. EARED GREBE.—First seen on July 13, when eleven were counted on Blue Lake. Two seen on Lac aux Mortes on July 17, and one, three, and one on Devils Lake, July 22, 23, and 25 respectively. No nests found.

Podilymbus podiceps. PIED-BILLED GREBE.—Seen only on one occasion, a lone adult observed on Crooked Lake on July 14.

Larus argentatus. HERRING GULL.—Two birds, in immature plumage, seen over Round Lake on July 5.

Larus delawarensis. RING-BILLED GULL.—Not common but seen regularly in all regions visited. The largest number observed in any one day was 30 at Crooked Lake on July 14.

Larus franklini. FRANKLIN'S GULL.—Abundant; large numbers seen in all areas, but particularly numerous at Turtle and Devils Lakes. At the latter point there was a large rookery at the west end of the lake. Late in the afternoon, usually about 6:00 o'clock, it was a common sight to see hundreds of these birds over the marshes, feeding "Flycatcher fashion," frequently low enough to nearly touch the grass. Grasshoppers appeared to be the food sought at these times, the birds taking them on the wing.

Sterna forsteri. FORSTER'S TERN.—Not common at any point except Lac aux Mortes, where they were apparently breeding. Singles and pairs were noted in the vicinity of other lakes.

Chlidonias nigra surinamensis. BLACK TERN.—Fairly common for this species; observed in all areas. At South Napoleon Lake on July 6,

a pair attacked me viciously, and I spent considerable time searching for their nest. The birds, however, soon lost interest in my activities and joined 10 or 12 companions that were flying about over the open water. I have had similar experiences with these birds in Colorado and have come to the conclusion that some birds attack merely because they resent intrusion to their domain. Specimens showing white body feathers were noted first at Devils Lake on July 21.

Phalacrocorax a. auritus. DOUBLE-CRESTED CORMORANT.—Seen only at Devils Lake and Lac aux Mortes on July 17 and 18; three were observed on both occasions. I was informed that these birds were at one time common on Devils Lake, and that organized hunts had been carried out to destroy them because of their fish-eating habits. It was claimed that attempts to stock the lake with game fishes were failures because of these birds.

Pelecanus erythrorhynchos. WHITE PELICAN.—Seven noted at Turtle Lake on July 13, and eight were seen flying through "the Narrows" at Devils Lake on July 22.

Anas platyrhynchos. MALLARD.—COMMON. In 1901 Mr. Bent found this a common breeder, although "outnumbered by at least three other species, the Blue-winged Teal, the Pintail, and the Shoveler. My own observations give an entirely different ratio, which may be indicative of the changes that have taken place or of a periodic fluctuation in the relative abundance of different species of somewhat similar habits. On some lakes (notably Devils Lake) the Pintail was a close second to the Mallard, but aside from that species the Mallard outnumbered all others by two to one. Young about three-fourths grown were trapped at South Napoleon Lake on July 9, but females with small downy young were seen as late as July 29. Small ponds and coulees appeared to be favorite resorts for these family parties, as several such groups were seen from the train, the ponds frequently being only a rod or two in length and less than half that breadth. An adult female trapped on July 9 was in such worn plumage that flight was almost impossible.

The few drakes seen early in the month were in full nuptial plumage; by July 20 "piebald" birds were observed and by the 29th the drakes had disappeared entirely, indicating that the moult was at its height at that time.

Chaulelasmus streperus. GADWALL.—Mr. Bent reported that the Gadwall "is not one of the commonest Ducks though we found it fairly abundant in the vicinity of the larger lakes." In the southern part of the State my observations indicated that it was not uncommon during this season, and females with young were seen at Pursian Lake and Dawson Slough. At Devils Lake these birds were rare, although I saw a few at Lac aux Mortes to the north. Ten, seen at Clear Lake, on July 11, were the largest number observed at any one lake.

Mareca americana. BALDPATE.—Decidedly rare; observed on only

two different dates—a lone female at South Napoleon Lake on July 6; two males in a small roadside pond and a female with four half-grown young at Dawson Slough on July 7. At Devils Lake I made a special search for this species but did not positively identify it at any point. In 1901 Mr. Bent found it "breeding abundantly" in this State, no less than 12 nests being found in half an hour on June 15.

Nettion carolinense. GREEN-WINGED TEAL.—Although Mr. Bent reported this Duck as "probably the rarest of the Anatidae breeding in North Dakota," I had opportunity to observe it on several occasions. Three or four adults were the largest number seen in any one day, and frequently these were male birds. To quote more fully from my notes, "July 7, one female with 9 young surprised while I was working at Dawson Slough; also two males seen together; July 11, two (a pair) seen at Clear Lake; July 18, a few noted at Lac aux Mortes, one male in nuptial plumage; July 23, three females or nearly grown young (probably the latter) seen on Mission Bay at Devils Lake. They did not fly, but took rapidly to the water at my near approach; July 25, one seen on a small coulee near the west end of Devils Lake."

Querquedula discors. BLUE-WINGED TEAL.—Not uncommon in the southern part of the State, but not seen at all at Devils Lake nor at any other lake in that vicinity. According to Mr. Bent, this was one of the most abundant Ducks on 1901. On July 10, I observed a flock of six that might possibly have been young although it would indicate an early nesting. Among them was, however, a male in full plumage.

Spatula clypeata. SHOVELER.—Rare in the southern, more common in the northern part of the State. No females with broods seen. Males in nuptial plumage still in evidence as late as July 23. (Devils Lake.)

Dafla acuta tzitzihua. PINTAIL.—As previously stated, the abundance of the Pintail was exceeded only by that of the Mallard and, as stated by Mr. Bent (loc. cit., p. 5), they are among the earliest breeders. Early in the month, in the southern part of the State I saw almost no males, but encountered several females with young. Some of the latter were about half grown by July 10. In the vicinity of Lac aux Mortes and Devils Lake they were even more numerous; four fully fledged young were noted on July 23. On July 25, a flock of about 40 Pintails was observed that was being led by a male in what appeared to be almost complete nuptial plumage. At the lakes near Hankinson this as well as other species was apparently rare; none were seen.

Marila americana. REDHEAD.—Although I worked systematically in several extensive marshes that from former experiences should have been ideal nesting grounds for Redheads, this species was not seen until I arrived at Lac aux Mortes on July 18, when a male and two females were observed. During the week following several were seen on Mission Bay, Devils Lake. No young were seen.

Marila valisineria. CANVASBACK.—In 1901 (loc. cit., p. 10) Mr. Bent

found Canvasbacks breeding in fair numbers in Steele County. My own experience with the species in North Dakota was confined to a single observation, made on July 11, when three adults were seen close to the shore of Clear Lake. That this fine bird has been forced to seek other breeding grounds is also evidenced by Mr. Bent's later statement (Bull. 126, 1923, p. 191) that they have now "largely, if not wholly, disappeared from that region."

Marila affinis. LESSER SCAUP.—Easily the most numerous of the Fuligulinae but hardly common anywhere. A few were seen on some of the deeper lakes in the vicinity of Napoleon and Turtle Lake, but, as Mr. Bent suggests, their center of abundance in North Dakota is in the Devils Lake region. Most of those seen were males, indicating that the females were still incubating, but on a few occasions small flocks were observed that were composed wholly of either adult females or fully fledged young. I did not see any birds that I was willing to refer to *M. marila*, nor did I see any Ring-necked Ducks.

Glaucionetta clangula americana. GOLDEN-EYE.—An adult male in full plumage was observed on one occasion only on Clear Lake in the Napoleon district on July 11. It was associated with a few Mallards and Pintails, among which its characteristic pattern marked it conspicuously.

Erismatura jamaicensis. RUDDY DUCK.—About a dozen individuals were seen, half of which were included in a flock seen on July 25 at Devils Lake, and were unquestionably a pair with their young. All others noted were solitary birds.

Branta c. canadensis. CANADA GOOSE.—Three birds were seen on Lac aux Mortes on July 18. They were so far out on the lake that they could be discerned only with the aid of field glasses.

Botaurus lentiginosus. BITTERN.—One was seen from the train near Braddock on July 12, and two others were noted on July 29 in the vicinity of Hankinson.

Ardea h. herodias. GREAT BLUE HERON.—Seen only in the Hankinson region, where eight were observed at Carters Slough on July 29.

Nycticorax n. naevius. BLACK-CROWNED NIGHT HERON.—Not common. Seen near Napoleon and at Devils Lake. About half of those noted were immature.

Porzana carolina. SORA.—Two were heard in Dawson Slough on July 7.

Fulica americana. COOT.—The only waterfowl that could be called plentiful. A few were found on almost every lake and slough, while the larger lakes supported large numbers. Young of all sizes were seen as early as July 5. The general unsatisfactory condition of the breeding areas appeared to have very little effect on the abundance of this species.

Steganopus tricolor. WILSON'S PHALAROPE.—Fairly common in all sections that were visited. Almost no females were seen, but a "reception committee" of males was frequently in attendance while I was examin-

ing some lake or slough. Two young, practically full grown, were seen at Clear Lake on July 11.

Recurvirostra americana. AVOCET.—A few seen at almost every lake in the vicinity of Napoleon and Turtle Lake. At Devils Lake, however, they were scarce. On July 7, while in the neighborhood of Pursian Lake, a pair were encountered near a road that led across open prairie country. Their actions indicated a nest close by and when I stopped the car one bird alighted in the road not 10 feet in front, while the other, screaming and flying around me in small circles, made repeated dives toward the car, "zooming" off after each attack. Some of the lakes were so shallow that these long-legged birds were able to wade entirely across.

Himantopus mexicanus. BLACK-NECKED STILT.—Observed only on one occasion; a solitary bird seen at Gooleys Slough with a small flock of *Totanus flavipes*, on July 29.

Micropalama himantopus. STILT SANDPIPER.—Seen once, a single bird on the drying mud flats of Nelson's Lake, on July 14.

Pisobia sp.? SANDPIPER.—Small Sandpipers (probably *P. minutilla*) were observed in large flocks on several occasions. On July 25, my notes state that they were very abundant on the mud flats at the west end of Devils Lake, and on the 29th "several hundred" were seen on Carters and Gooleys Sloughs, near Hankinson. Time was not taken to ascertain the identity of these birds, but on the occasion last mentioned I recorded my belief that both *Pisobia* and *Ereunetes* were represented, which, if correct, meant *E. pusillus* and possibly *E. mauri* in addition to *P. minutilla*.

Limosa fedoa. MARBLED GODWIT.—A single bird seen near Napoleon on July 7 and four at Blue Lake on the 13th.

Totanus flavipes. YELLOW-LEGS.—Common at most of the lakes visited until July 25, at which time I was camped on the shore of Mission Bay, Devils Lake. After that date only a few were noted each day.

Catoptrophorus semipalmatus inornatus. WESTERN WILLET.—Fairly common in all regions visited. Noted as solitary birds, pairs, and flocks of three to eight. I observed no evidence of their breeding, although they were noisy, as is usual with this species.

Bartramia longicauda. UPLAND PLOVER.—It was a pleasure to meet and to hear again these old friends of the Colorado prairies. They were not numerous, although on July 10 I saw 8 or 10 in the Turtle Lake region. When flushed, they would be almost certain to alight on a fence post if such a vantage point was in their "territory." Not seen at all in the vicinity of Devils Lake or Hankinson.

Actitis macularia. SPOTTED SANDPIPER.—Rather rare. The first one seen was at Crooked Lake, on July 14. On the 24th one was observed near my trap at Devils Lake, and the following day a pair with three grown young were in the same neighborhood.

Numenius americanus. LONG-BILLED CURLEW.—Seen on two occasions only—a single bird at South Napoleon Lake on July 5, and two observed near Crooked Lake on the 14th.

Oxyechus vociferus. KILLDEER.—In the Napoleon and Turtle Lake regions Killdeers were plentiful, being found at every lake. At Devils Lake they were uncommon and in the vicinity of Hankinson were not seen at all.

Charadrius semipalmatus. SEMIPALMATED PLOVER.—Not seen by me, but while visiting the State Biological Station at Devils Lake on July 19 I met Mr. Norman A. Wood, who had secured on that day a fully fledged young bird of this species, which I was able to examine.

Podasocys montanus. MOUNTAIN PLOVER.—Seen once, near Carters Slough, on July 29. This bird certainly had a nest or young in the vicinity, as it was exceptionally fearless and repeatedly allowed me to approach within 10 feet before making a short flight.

Tympanuchus americanus. PRAIRIE CHICKEN.—Common in the Napoleon and Turtle Lake regions. The successive dry seasons had benefited this species, and several hens with large broods of chicks were noted. Such birds were foolishly tame, although the young, about the size of Quail, were able to fly strongly.

Pedioecetes phasianellus campestris. PRAIRIE SHARP-TAILED GROUSE.—Not seen until I reached Turtle Lake, but in that vicinity they were almost as common as the Prairie Chickens. In the neighborhood of Devils Lake they appeared to replace the Chickens entirely as the ecological conditions were more to their liking. They were usually flushed from growths of sumac or rosin-weed (*Silphium laciniatum*). Three specimens, an adult and two half-grown young, were taken that had been feeding on grasshoppers, June berries (*Amelanchier*), and the pitchy buds and flowers of the rosin-weed.¹

Zenaidura macroura carolinensis. MOURNING DOVE.—Plentiful except in the vicinity of Devils Lake, where only a few were seen.

Circus hudsonius. MARSH HAWK.—Raptors were seen in the vicinity of Napoleon, Turtle Lake, and Devils Lake; they were not common in any region visited, but Marsh Hawks outnumbered all others. On July 6, I found a nest with four nearly fledged young in the practically dry marsh at the north end of South Napoleon Lake. The female bird maintained a persistent offensive against my presence, at times diving to within ten or fifteen yards of my head. On the 11th I saw one carrying a Ground Squirrel (*Citellus*).

Buteo borealis calurus. WESTERN RED-TAIL.—A fine adult seen July 24 near Devils Lake and two in the same area on the following day.

Buteo borealis krideri. KRIDER'S HAWK.—The finest specimen of this race that I have ever observed was noted near Napoleon on July 11. It was perched on a fence post near the road and allowed the machine to approach within 20 or 30 feet before taking flight.

Buteo swainsoni. SWAINSON'S HAWK.—On July 25, I examined the

¹ Lincoln, Frederick C. "A Nete on the Food Habits of the Sharp-tailed Grouse (*Pedioecetes p. campestris*)", *Proc. Biol. Soc. of Washington*, vol. 36, p. 200, 1923.

remains of a specimen of this Hawk that had been wantonly killed by a hunter and left where it fell beside a fence row.

Cerchneis s. sparverius. SPARROW HAWK.—Noted twice near Devils Lake and once near Hankinson.

Asio flammeus. SHORT-EARED OWL.—A few seen. On July 15, while en route between Underwood and Minot, an adult and four nearly grown young were flushed by the train from between the rails where they had apparently been enjoying a sun bath. An adult, observed near Lac aux Mortes on the 18th, when flushed a second time flew high and was still in the air, circling at a considerable altitude, when I left the vicinity several minutes later.

Speotyto cunicularia hypogaea. BURROWING OWL.—Several were seen in the Napoleon region. Always solitary; no sign of the colony group which is a character of the "dog-towns" of the west. Also seen near Turtle Lake on July 14.

Dryobates pubescens medianus. DOWNY WOODPECKER.—Noted on one occasion only; a single bird observed near my camp at Devils Lake on July 26.

Colaptes auratus luteus. NORTHERN FLICKER.—Common among the oaks and box elders that mark the old shore line of Devils Lake.

Chordeiles virginianus sennetti. SENNETT'S NIGHTHAWK.—Observed commonly until July 20, when they became scarce. A few observed subsequent to that date, most of which were moving southward, generally at high altitudes.

Chaetura pelagica. CHIMNEY SWIFT.—A few seen at Minot, July 16, and at the town of Devils Lake on the 17th.

Tyrannus tyrannus. KINGBIRD.—Common in all sections. A nest with four half-grown young was found near Napoleon on July 6. It was in a cuplike cavity in the top of a fence post close to the railroad. On July 20 I watched a Kingbird attack a Hawk and saw it alight on the back of the larger bird, to be carried 40 to 50 yards before again taking flight.

Tyrannus verticalis. ARKANSAS KINGBIRD.—In some localities (notably near Devils Lake) this species was almost as common as *T. tyrannus*. Always found around buildings or trees, while *tyrannus* was frequently noted along fences on the open prairie.

Empidonax t. trailli. TRAILL'S FLYCATCHER.—In the neighborhood of my camp at Devils Lake this species was not uncommon.

Otocoris alpestris praticola. PRAIRIE HORNED LARK.—Fairly common in the Napoleon and Turtle Lake regions but much less so around Devils Lake and Hankinson. No specimens were taken and in referring the *Otocoris* seen to this race, I do so on geographic grounds only.

Corvus b. brachyrhynchos. CROW.—Observed only in the vicinity of Devils Lake and from the train while near Minot. In the neighborhood of my camp at Mission Bay I found Crows surprisingly bold and audacious, deliberately following me and cawing while within easy range. One killed while thus engaged proved to be a young bird fully fledged.

Dolichonyx oryzivorus. BOBOLINK.—Common locally over much of the territory visited. There was a small colony nesting near North Napoleon Lake in a rank growth of milkweed (*Asclepias*), and while watching them on July 10 I observed a curious performance. On several occasions the males would flock together as at a prearranged signal, fly rapidly from the field in close formation for a considerable distance, and then scatter like the fragments of a bursting shell, each bird turning about and returning in a leisurely fashion to his own part of the cover. The females were no doubt incubating, as I was able to flush only two or three.

Molothrus a. ater. COWBIRD.—Common both along the roads on the open prairies and in the vicinity of the marshes, especially those that are more or less meadowlike.

Xanthocephalus xanthocephalus. YELLOW-HEADED BLACKBIRD.—Common in practically every marsh visited.

Agelaius p. fortis. THICK-BILLED REDWING.—Plentiful everywhere. When I arrived at Napoleon on July 5 the young birds were already flying, and small flocks were gathering together.

Sturnella neglecta. WESTERN MEADOWLARK.—Plentiful. One of the most numerous land birds. Large numbers of half-grown young were seen. They had almost ceased to sing by the last of the month.

Icterus galbula. BALTIMORE ORIOLE.—Noted only at Devils Lake where it was common. Two broods of young were seen on July 17, in one instance being fed by a highly colored male.

Euphagus cyanocephalus. BREWER'S BLACKBIRD.—Common. A flock of 15 or 20 individuals was seen in a newly plowed field near Fargo on July 28, most of the others noted were single birds or pairs.

Quiscalus quiscula aeneus. BRONZED GRACKLE.—A few birds were seen at Devils Lake on July 25 and others in the town of Hankinson, on the 29th.

Astragalinus t. tristis. GOLDFINCH.—Plentiful around Mission Bay at Devils Lake. A few were seen near Hankinson.

Calcarius ornatus. CHESTNUT-COLLARED LONGSPUR.—Without question the most abundant land bird in the prairie regions. Males were still singing and in full nuptial plumage on July 10, although more than half of the birds that were seen in the course of a day were full-grown young.

Poocetes gramineus confinis. WESTERN VESPER SPARROW.—Common; mostly seen, as is usual, along the fences and roads.

Passerculus sandwichensis nevadensis. NEVADA SAVANNAH SPARROW.—I was anxious to gain experience with *Ammodramus bairdi* on its breeding grounds, as I had only collected it while on migration, and accordingly made several special searches with this end in view, all of which were unsuccessful. I did, however, on July 10, discover a breeding colony of this race near Napoleon and obtained several specimens. The ground was not marshy although grown up in high grass. The males were in song and were extremely solicitous of the females. The actions of these birds

did not strongly remind me of *P. s. alaudinus*, with which I am most familiar. They were not nearly so ready to drop into the grass and hide. Wing shooting was, however, necessary in order to procure specimens.

***Ammodramus savannarum bimaculatus*.** WESTERN GRASS-HOPPER SPARROW.—Not uncommon and I am sure that they were nesting in the weed patches, particularly along the railroads. One specimen secured.

***Spizella pallida*.** CLAY-COLORED SPARROW.—Common in the vicinity of Devils Lake, showing a special preference for the areas covered with sumac.

***Spiza americana*.** DICKCISSEL.—Two seen near Napoleon on July 6.

***Calamospiza melanocorys*.** LARK BUNTING.—There was a small colony close to the town of Napoleon, but they were not noted in any other area in that vicinity. They were, however, fairly common near Turtle Lake on July 13.

***Progne s. subis*.** PURPLE MARTIN.—About a dozen were noted in the town of Devils Lake on July 17, and a few were observed flying over Mission Bay on the 27th.

***Petrochelidon l. lunifrons*.** CLIFF SWALLOW.—A few were seen around a farmhouse near Clear Lake on July 11.

***Hirundo erythrogastra*.** BARN SWALLOW.—Not common, but regularly distributed over those portions of the State that were visited.

***Riparia riparia*.** BANK SWALLOW.—In the vicinity of Napoleon a small colony was utilizing the banks (which were not more than three feet high) of a railroad cut. The young were leaving the nests on July 10. Other colonies were seen in other regions, but on July 29, while near Hankinson, I was treated to the sight of a flock that I estimated at 3,000 individuals, mostly young. The dusty road was being employed by the birds for the purpose of a dust bath, and at times for a distance of 25 or 30 yards it was literally a mass of wriggling Swallows. When flushed from the road they alighted so thickly on a telephone wire that it resembled a great string of beads, and for distances of several yards no wire was visible. The bulk of the flock finally took wing and circled steadily upward in a confused and orderless mass until they had gained three or four hundred yards of altitude. They were still circling when I left the vicinity.

***Bombycilla cedrorum*.** CEDAR WAXWING.—Several were observed at Devils Lake on July 22 and 27, and five near Hankinson on the 29th.

***Lanius ludovicianus excubitorides*.** WHITE-RUMPED SHRIKE.—Six specimens that were seen near Lac aux Mortes on July 18 were, in all probability, a family party. A single bird was seen near Devils Lake on July 27.

***Dendroica a. aestiva*.** YELLOW WARBLER.—Plentiful in the neighborhood of Devils Lake. This was the only Warbler that was seen.

***Dumetella carolinensis*.** CATBIRD.—Common in the thickets around Devils Lake.

Toxostoma rufum. BROWN THRASHER.—Not common. A few seen near Turtle Lake and a few others at Devils Lake.

Troglodytes aëdon parkmani. WESTERN HOUSE WREN.—Seen only around Devils Lake and not commonly there.

Telmatodytes palustris iliaceus. PRAIRIE MARSH WREN.—Plentiful in the marsh at South Napoleon Lake. At least 50 or 60 nests were found, none of which appeared to be "dummies." Heard singing in the tules at Lac aux Mortes.

Planesticus migratorius propinquus. WESTERN ROBIN.—Not common at any point that I visited. Almost all that were seen were in the towns.

Biological Survey, Washington, D. C.

SOME SUMMER BIRDS OF LAKE OWEN, BAYFIELD COUNTY, WISCONSIN.

BY A. W. SCHORGER.

LAKE OWEN is a narrow and irregular body of water with a maximum length of six and one-fourth miles. It is about 25 miles from Lake Superior into which it drains. The shores are in general high and thickly covered with young timber to the water's edge. The country is hilly, gravel and sand having a large part in the composition of the soil. Sphagnum bogs representing lakes, extinct or approaching extinction, are common. This region was once covered by a coniferous forest of white pine, red pine and hemlock; as usual following lumbering a heavy growth of aspen, white birch, and maple has resulted except where fires have been of frequent occurrence. Along the roads there are numerous small farms.

The data given below were obtained during two brief periods, July 3-10, 1920 and June 9-20, 1923. The failure to find such common species as the Yellow Warbler, Field Sparrow, and Savannah Sparrow was unexpected. Dr. H. H. T. Jackson wrote me under date of September 13, 1921, that he had found the Olive-sided Flycatcher (*Nuttallornis borealis*) quite plentiful two years before at Lake Namekagon, which is about ten miles to the east but I was unable to find this species at Lake Owen.

Gavia immer. LOON.—Common.

Mergus americanus. MERGANSER.—On June 17 some fishermen informed me that they had chased a Fish Duck with young to the end of East Bay and back in an attempt to get a photograph. Taking a boat I soon found the brood and after a short stiff pull was able to overtake it in a small cove, approaching within a few feet. The nine young appeared to be about ten days old. Neither the mother nor young made any attempt to dive or escape by land, but always over the water regardless of the distance between the boat and the shore. The mother was always behind the young and a laggard was buffeted ahead. Her note was a very harsh *kwerr*, having no resemblance to the sound of a Duck. The frequent act of thrusting the crested head forward and down reminded one of an angry stallion. The family was again seen on the evening of the 18th. On the morning of the 19th I was out at 4:30 and quite by accident came out to the lake shore where they were feeding, a few feet distant, under some overhanging bushes. All the young for which there was space were riding on the mother's back, while the remainder appeared to be picking insects from the surface of the water.

Botaurus lentiginosus. BITTERN.—Seen several times near the sphagnum bogs.

Ardea herodias herodias. GREAT BLUE HERON. Common.

Actitis macularia. SPOTTED SANDPIPER.—Fairly common at Lake Owen and on the Namekagon River.

Oxyechus vociferus. KILLDEER.—Rather common; most numerous around Pitcher Lake.

Bonasa umbellus umbellus. RUFFED GROUSE.—This species was much more numerous in 1923 than in 1920. On June 15, I met a hen with young about two inches long. After receiving the signal to hide, one of the young behaved exceptionally by answering the mother and running about ten feet.

Pedioecetes phasianellus campestris. PRAIRIE SHARP-TAILED GROUSE.—On June 11, while crossing an area between Pitcher Lake and Marston that contained only a small amount of brush a flock of five of these birds flushed and disappeared ahead. A few minutes later apparently the same birds flushed singly though I was passing 150 feet to the left of them. When flushed the vigorous beating of the wings combined with the utterance of *kuk-kuk-kuk* give the appearance of great fright. I later saw two mounted specimens belonging to a local taxidermist at Cable that had been killed two years previously by him. Locally they are called simply Grouse; reported as fairly common.

Circus hudsonius. MARSH HAWK.—Fairly common, particularly in the vicinity of Agnes Bay. On July 5, one was seen carrying a frog and pursued by Crows. On June 10 a male Marsh Hawk leisurely pursued and captured a bird as it was crossing the bay.

Accipiter velox. SHARP-SHINNED HAWK.—Individuals were seen both years.

Buteo borealis borealis. RED-TAILED HAWK.—A single bird was seen both years.

Cerchneis sparveria sparveria. SPARROW HAWK.—A pair nested in large pine stub near camp in 1920; not seen in 1923.

Pandion haliaetus carolinensis. OSPREY.—Seen on three occasions at south end of the lake in 1920.

Bubo virginianus virginianus. GREAT HORNED OWL.—Seen on two occasions in June.

Coccyzus erythrophthalmus. BLACK-BILLED CUCKOO.—Common.

Ceryle a. alcyon. BELTED KINGFISHER.—Common. June 10 and 11, nests with young, one in a railway cut, the other along the highway.

Dryobates villosus villosus. HAIRY WOODPECKER.—Seen on several occasions.

Dryobates pubescens medianus. DOWNY WOODPECKER.—Only one record, June 15; for a wooded country the *Picidae* were far from common.

Melanerpes erythrocephalus. RED-HEADED WOODPECKER.—Seen on two occasions each year.

Colaptes auratus luteus. NORTHERN FLICKER.—This was the only Woodpecker that could be called common; a nest found July 5 contained nearly full-grown young.

Chordeiles virginianus virginianus. NIGHTHAWK.—Common.

Antrostomus vociferus vociferus. WHIP-POOR-WILL.—Common.

Chaetura pelagica. CHIMNEY SWIFT.—Fairly common.

Tyrannus tyrannus. KINGBIRD.—Common. During the logging period, the level of the lake was raised several feet by the construction of a dam at the outlet; this resulted in leaving many trees, now mere stubs, at the ends of the various bays. On June 14, I found two nests with 4 eggs each on stubs, 25 to 200 feet from shore. Nests two feet above the water and 100 feet from shore on July 5 contained four well grown young; latter left the nest July 8. In a previous note¹ we have called attention to the decided inclination of this species to nest over the water.

Myiarchus crinitus. CRESTED FLYCATCHER.—Heard June 19 and July 10.

Sayornis phoebe. PHOEBE.—Common about habitations. Three young left the nest June 13; July 3, nest with 3 eggs and one young; another with 3 eggs; July 4, nest with 4 eggs.

Myiochanes virens. WOOD PERVEE.—Found this species common in June 1923, but had only two records for July 1920.

Empidonax minimus. LEAST FLYCATCHER.—Abundant.

Cyanocitta c. cristata. BLUE JAY.—Fairly common.

Corvus b. brachyrhynchos. CROW.—Common. June 18, nest with two fully grown young. Noticed Crows pick food from the surface of the lake with almost as much skill as a Tern.

Dolichonyx oryzivorus. BOBOLINK.—A few were found in the meadows.

¹ 'Auk,' XXXVII (1920) 144.

Molothrus ater ater. COWBIRD.—Common. Flock of sixty seen on a pasture fence July 6.

Agelaius phoeniceus phoeniceus. RED-WINGED BLACKBIRD.—Common in low meadows, sphagnum bogs, and along the Namekagon River.

Sturnella magna magna. MEADOWLARK.—Fairly common in the meadows.

Icterus galbula. BALTIMORE ORIOLE.—Common.

Quiscalus quiscula aeneus. BRONZED GRACKLE.—Common.

Carpodacus purpureus purpureus. PURPLE FINCH.—Fairly common. On July 7 saw a pair feeding a fluttering young.

Astragalinus tristis tristis. GOLDFINCH.—Common.

Spinus pinus. PINE SISKIN.—Two seen in the white pines at Pitcher Lake, July 7.

Poocetes gramineus gramineus. VESPER SPARROW.—Common in the fields and roadsides. On June 14 caught a young bird barely able to fly.

Zonotrichia albicollis. WHITE-THROATED SPARROW.—Only fairly common; found only in the vicinity of bogs.

Spizella passerina passerina. CHIPPING SPARROW.—Common. After a hail storm on June 19, picked up a nest and a dead, well-feathered young beneath a white pine.

Spizella pallida. CLAY-COLORED SPARROW.—Abundant in all suitable localities; prefers open places with scattered clumps of hazel and young conifers. The nests are placed two to four feet from the ground, but in my experience never on it; they are usually well concealed and lined with fine grass though a few contain horse hair. A nest found June 10 in a small hemlock contained two eggs; this appears to mark the period of oviposition. Another in a hazel bush from which the bird was flushed was empty on this date, but contained two eggs on June 12. On June 12 I examined eight apparently complete but empty nests in a group of low conifers. A nest with four eggs under observation in July 1920, showed no change until July 10 when three eggs hatched; July 7, nest with three callow young; July 9, nest with four eggs. The male sings frequently from a low perch near the nest and may be heard until dark.

Junco hyemalis hyemalis. SLATE-COLORED JUNCO.—Surprisingly uncommon; saw a pair in a clump of white pines June 14.

Melospiza melodia melodia. SONG SPARROW.—Common. Saw young able to fly June 14.

Pipilo erythrophthalmus erythrophthalmus. TOWHEE.—Common.

Zamelodia ludoviciana. ROSE-BREASTED GROSBEEK.—Common in the pole timber.

Piranga erythromelas. SCARLET TANAGER.—Common. Nest July 10 with 3 half-grown young.

Progne subis subis. PURPLE MARTIN.—Common.

Hirundo erythrogastra. BARN SWALLOW.—Common about the farms.

Iridoprocne bicolor. TREE SWALLOW.—Common; nest with 4 young with only a few pin feathers, June 19.

Riparia riparia. BANK SWALLOW.—Common.

Bombycilla cedrorum. CEDAR WAXWING.—Common. Saw birds carrying nesting material June 10 to 20. On July 7 found two nests at Pitcher Lake; one with four callow young was twenty feet from the ground near the end of a lateral branch of a large white pine; the other nest with four eggs was placed in a small maple only 6 feet from the ground.

Lanius ludovicianus migrans. MIGRANT SHRIKE.—One seen on a telegraph wire July 3.

Vireosylva olivacea. RED-EYED VIREO. —Abundant. June 15, two nests with four eggs each; June 16, nest with three eggs; July 10, a Cowbird on the ground and unable to fly was being fed. Birch bark was largely used in the construction of all the old and new nests examined.

Vireosylva gilva gilva. WARBLING VIREO.—Fairly common but noted only in the vicinity of habitations.

Mniotilta varia. BLACK AND WHITE WARBLER.—This Warbler was not observed in July 1920, but in June, 1923, I found it common. The males were found singing invariably in conifers or their vicinity.

Vermivora ruficapilla ruficapilla. NASHVILLE WARBLER.—A singing bird was observed on July 8; in June I found it fairly common in rather open stands of young hard-woods.

Dendroica caerulescens caerulescens. BLACK-THROATED BLUE WARBLER.—One record, a singing male June 13.

Dendroica coronata. MYRTLE WARBLER.—There appear to be but few summer records for this species. King¹ obtained a male at Elk Lake, Chippewa County, July 26, 1876. Kumlien and Hollister² state that they have never found it in the State in summer. Dr. H. H. T. Jackson informs me that he found it near Lake Namekagon in June, 1919, where it was evidently breeding. I saw it twice in July 1920 at Lake Owen. On June 10, 1923, I collected a male in a grove of white pines a quarter of a mile east of the Cavalier Resort. Several females and males were subsequently seen, a pair being seen frequently in a group of white pines beside the cottage that I occupied but a careful search failed to reveal a nest. The afternoon of June 19, there was a hard storm during which it hailed heavily; while the hail was falling I noticed a bird come fluttering down from a white pine and alight at the foot of a clump of birch trees. As soon as the hail ceased I picked up the bird; it proved to be a young, uninjured Myrtle Warbler, that could apparently have flown, had it not been so drenched by the rain. As I was returning it to the tree, three adult Myrtle Warblers, two males, and a female, came near in response to its cries. This is apparently the first definite breeding record, though it should be fairly

¹ Geology of Wisconsin. Vol. 1 (1873-9) 503.

² Birds of Wisconsin. Bull. Wis. Nat. Hist. Soc. 3 (1903) 113.

common in the northern part of the State, since it nests in both Minnesota and Michigan.

Dendroica pensylvanica. CHESTNUT-SIDED WARBLER.—Common in brushy places having a few small trees. Nest June 10, with two eggs; June 17, nest with a single callow young.

Dendroica vigosii. PINE WARBLER.—Fairly common, found it in greater numbers in 1923 than in 1920.

Seiurus aurocapillus. OVENBIRD.—Abundant; June 11, nest with two eggs including one Cowbird egg; June 12, nest with two eggs; July 10 caught a young bird not quite able to fly.

Oporornis philadelphia. MOURNING WARBLER.—Common. For some unaccountable reason Kumlein and Hollister state that this species never breeds in the State but that *Oporornis agilis* does. My experience is exactly the opposite; I failed to find *agilis* at Lake Owen at all. The latter, it is true, is one of the latest migrants, as I have taken it at Madison as late as June 6, but have not yet seen it in the State at a later date. The Mourning Warbler was found usually in the low growth frequented by the Maryland Yellow-throat and Chestnut-sided Warbler; in one case a male was frequently found singing at the edge of a wood lot that was entirely free from underbrush. This bird sang with great regularity; there was never a variation of more than one second from the fourteen seconds interval between songs. In July when the birds had young, the males had a Chat-like habit of keeping parallel with you, moving secretively through the undergrowth, to appear a short distance ahead and begin singing again.

On June 9, I found this species common near Draper, in Sawyer County.

Geothlypis trichas trichas. MARYLAND YELLOW-THROAT.—Common.

Wilsonia canadensis. CANADA WARBLER.—Common; found on the densely wooded peninsulas of the lake, and on the brushy slopes about the sphagnum bogs.

Setophaga ruticilla. REDSTART.—Common.

Dumetella carolinensis. CATBIRD.—Fairly common; nest with four eggs, June 19.

Toxostoma rufum. BROWN THRASHER.—Common.

Troglodytes aëdon parkmani. WESTERN HOUSE WREN.—Common everywhere; June 12, nest with seven eggs; July 9, nest with three young ready to leave.

Penthestes a. atricapillus. CHICKADEE.—Fairly common.

Hylocichla fuscescens fuscescens. VEERY.—Abundant. Nests: June 10, one young and one Cowbird egg; June 12, three eggs and one Cowbird egg, located in a pile of brush; July 4, two eggs and two callow young, nest placed in a red osier four feet from the ground. On July 5, I took five Cowbird eggs from a nest that also contained two eggs of the owner; the nest was not abandoned on this account.

Hylocichla guttata pallasii. HERMIT THRUSH.—Not noted in 1920, but in June 1923, I located three pairs, in each case at the edge of the

timber. This species was much less shy than the former and when disturbed uttered a very characteristic *dre-e-e*, having the quality of the song of the Yellow-throated Vireo. Diligent search failed to reveal a nest though the object of their solicitude in one case proved to be a half-grown Cowbird.

Planesticus migratorius migratorius. ROBIN.—Common. Young were flying the middle of June; July 7, nest with three fresh eggs.

Sialia sialis sialis. BLUEBIRD.—Common.

2021 Kendall Ave.,
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NOTES ON THE BREEDING BIRDS OF NORTHEASTERN GEORGIA.

BY THOS. D. BURLEIGH.

THESE notes were, with one exception, taken during the summer of 1922, while in camp at the foot of Brasstown Bald four miles from Young Harris, Georgia. Our camp lay on the line between Towns and Union Counties, so in some cases, where the Bald is concerned, it is an open question as to which county certain nests were found in. The one exception mentioned above concerns the Southern Robin, the breeding data on which is included, although referring to Rabun County, Georgia, because actual breeding records for this species in the state are very scarce.

The region about Young Harris has been described so well by Arthur H. Howell (Notes On The Summer Birds of Northern Georgia, 'The Auk,' Vol. XXVI, No. 2, April, 1909) that no attempt will be made to touch on the topography of this region at this time. Nor will any but the more interesting records be cited, for a complete list would be unnecessary duplication unless concerning actual breeding records. Of the following nine species recorded during the summer, four of them, *Melospiza melodia melodia*, *Bombycilla cedrorum*, *Wilsonia canadensis* and *Nannus hiemalis hiemalis*, are here noted for the first time as occurring in the state during the summer months, while the others concern possibly the first actual breeding records for the State.

Antrostomus vociferus vociferus. WHIP-POOR-WILL.—On July 7, a female was flushed from two well incubated eggs lying in a slight hollow

in the dead leaves at the edge of a short stretch of woods in the open valley. While not an uncommon summer resident in the northern part of the State there are, I believe, no previous records of its eggs having been found.

Junco hyemalis carolinensis. CAROLINA JUNCO.—The top of Brass-town Bald is one of the few spots in the State where this species breeds, and here none were seen during the summer below an elevation of 4000 feet. The birds find a congenial summer home among the rhododendron thickets that dot the northern slope of this rugged mountainside and are fairly plentiful over this limited area. The first nest was found June 27, and held on that date three slightly incubated eggs. It was sunken flush with the ground in thick green moss and was protected and concealed from above by a protruding root, and was on a steep slope practically at the top of the mountain. It was compactly built of rootlets, grasses and green moss, thickly lined with rabbit fur. Another nest found the same day held two half-grown young and was sunken in the moss and ferns covering a ledge of a large boulder. These were without doubt second sets for on June 20, a young bird, out of the nest several days, was seen being fed by both adult birds. A third nest found July 16, that held three well incubated eggs, was to me remarkably interesting for it differed radically from any of this species (*hyemalis*) or any of its subspecies, that I had ever seen. It was fully eight feet from the ground in a red maple sapling and partially concealed by a grape vine, and was a large rather loose ball of green moss intermixed with a few dead leaves and rootlets, well cupped and lined with black rootlets and, at the bottom, fine grasses and a few horse hairs. I later realized that this method of nesting was seemingly by no means uncommon here for two other nests were found during the summer in situations very similar to this. These are to the best of my knowledge the first authentic breeding records for the State, although this species has been known to occur here during the summer months.

Melospiza melodia melodia. SONG SPARROW.—This species is beyond question gradually extending its range southward, for while until the past few years it had not been known to occur anywhere in the State during the breeding season, it is now fairly plentiful in suitable localities during the summer months in the extreme northeastern part of Georgia. I have found it in Rabun, Union, Towns and Fannin Counties, the last being as far as I could determine the limit of its present distribution. A nest found July 10 near Young Harris, in Towns County, held three slightly incubated eggs and was three feet from the ground in a blackberry bush in an overgrown ditch in the middle of an open field. It was large and compactly built of weed stems and grasses, lined with fine grasses and horse hair. This is the first actual breeding record for the State.

Bombycilla cedrorum. CEDAR WAXWING.—The little field work done in the northern part of Georgia had never included this species as a summer resident, so my limited experience causes me to question whether it had merely been overlooked or whether it also is gradually shifting its

breeding range south through the mountains. Even now it is by no means plentiful, but scattered pairs can be found in the open valleys, and it will be interesting to see in the years to come whether it increases perceptibly in numbers. My first nest was found July 20, within two miles of Young Harris, and held on that date five well incubated eggs. It was forty-five feet from the ground at the outer end of a limb of a large white oak at the side of a road bordering an open field and was built of weed stems, grasses, rootlets and light green moss-like lichens, lined somewhat with dry pine needles. The following day, while passing an open grove of scrub pines (*Pinus virginiana*) that bordered the road five miles northeast of Young Harris, the actions of a pair of these birds aroused my suspicions and a short search revealed two apparently new nests. The first was fifty feet from the ground in the top of one of the larger trees and an investigation revealed that it was without doubt the first attempt of this pair to breed here, broken egg shells in the bottom showing that it had come to a disastrous end. The second nest was thirty feet from the ground at the extreme outer end of a limb of one of the pines and reaching it necessitated the use of a rope. It held one fresh egg and later was found to be deserted, due I suppose to the treatment it received in my effort to examine it. It was rather shabbily built of dry pine needles and the same light green moss-like lichens, with a very few rootlets and grasses. Other birds were observed during the summer but lack of time prevented my devoting more time to them.

Lanivireo solitarius alticola. MOUNTAIN VIREO.—This species has long been known to be a common summer resident through the mountains in the northern part of the State, but as there seem to be no actual breeding records the following notes may be of interest and value. One fact that seems to me to be well worth recording is that two broods are raised each year, the first during the latter part of April and early May, and the second in June. Nests from which the young had already flown were found early in June, and my experience would certainly prove the later nesting. The first nest with eggs was found June 14, holding on that date four well incubated eggs. It was twenty-five feet from the ground suspended from a fork at the outer end of a limb of a large hemlock close to a stream in a ravine, and at the foot of Brasstown Bald. A second nest, found June 19, also held four well incubated eggs and was eighteen feet from the ground suspended from a fork at the outer end of a limb of a beech sapling well up the mountain side. The female was incubating and was remarkably tame, remaining on the nest until the limb was cut off and the nest brought within reach, flying only when stroked on the back. A third nest found June 25 held one fresh egg and was later deserted. It was twelve feet from the ground at the outer end of a limb of an uprooted ash sapling in a ravine probably half way up the mountain. These nests were all alike in construction, being compactly built of grasses, fragments of weed stems and shreds of bark, lined with fine grasses, vine tendrils and fine hemlock

twigs, and well covered on the outside with, in two cases, fragments of an old hornet's nest, and invariably numerous green lichens. This habit of ornamenting the nest with green lichens, in the same manner as a Wood Pewee or a Blue-gray Gnatcatcher conceals its nest, is characteristic of this bird alone of all the eastern and possibly the western Vireos, and is the more interesting in that this is only a subspecies occurring over a limited area. As confirming my opinion that two broods are raised each year, I might add here the fact that a fourth nest was found July 15, in Fannin County, that held newly hatched young.

***Dendroica caerulescens cairnsi*.** CAIRNS' WARBLER.—This species is limited and decidedly local in its distribution in the State for it is entirely wanting in Fannin County and, in my experience, breeds only on Brasstown Bald, which lies in both Union and Towns Counties. Here, however, it is quite plentiful and nests indiscriminately in the valleys, on the mountain sides and on the higher ridges to an elevation of approximately 4900 feet. Two nests were found on May 12, in each three slightly incubated eggs. One was two feet from the ground in the top of a small red maple sapling close to a stream in a ravine, the other a foot from the ground in a small laurel bush part way up the mountain side. Both were compactly built of shreds of bark and grasses, well lined with fine black rootlets, one being covered slightly on the outside with spiders' down. These are, I believe, the first nests to be taken in Georgia.

***Wilsonia canadensis*.** CANADA WARBLER.—This species has never been recorded before as breeding in the State but I found it this past summer fairly plentiful on the north slope of Brasstown Bald above an elevation of 4000 feet. This is rather a limited area but I feel that at least ten pair must have nested there among the moss-covered boulders and tangled rhododendron thickets. No nests were actually found, but on June 20, a male was seen carrying food and displaying decided uneasiness over my presence, indicating beyond any question that young were nearby.

***Thryomanes bewicki bewicki*.** BEWICK'S WREN.—This is a rather common summer resident throughout the northern part of the State, there being few farm houses in these mountain valleys without a pair of these birds. A nest was found June 18 near Blairsville, in Union County, that held six well incubated eggs and was on the sill above the door of an unoccupied house at the edge of a short stretch of woods. It was large and bulky, and was built of coarse twigs, dead leaves, grasses, weed stems and green moss, well hollowed in the top and lined with chicken feathers, a little horse hair and fragments of an old snake skin.

***Nannus hiemalis hiemalis*.** WINTER WREN.—One of the real surprises the summer held in store for me was finding a pair of these birds breeding on the cool damp north slope of Brasstown Bald. It had never even occurred to me that this species might linger this far south to nest and actually finding it in Georgia during the summer months was a totally unexpected pleasure. The birds were restricted to a narrow area at an

elevation of approximately 4100 feet but here the male could be found singing at all hours of the day, although he was so restless and elusive, as he fed about old logs and uprooted trees, that he was more often heard than seen. The nest was found June 15 after a long hard search but it was empty, and judging from its appearance the young had already flown. It was well concealed in the top of the upturned roots of a large hemlock close to a small stream, and differed in no way from those I had found farther north, being a ball of fine hemlock twigs and green moss, with the entrance at one side and at the top.

Planesticus migratorius achrusterus. SOUTHERN ROBIN.—As I knew of but one breeding record for this species in the State, a set of eggs having been taken near Atlanta several years ago by Dr. Wm. H. LaPrade, I was interested during a week-end spent in Rabun County, in the extreme northeastern part of the State, to find it nesting fairly plentifully in and about several of the small towns there. I was at Clayton April 13, and with the short time I had at my disposal I succeeded in finding four nests, three practically built but as yet empty and the last with three slightly incubated eggs. This nest was twelve feet from the ground in a crotch at the outer end of a limb of a large post oak at the side of a road and was built of twigs, weed stems, grasses and mud, well lined with fine grasses. The following day was spent at Dillard, ten miles north of Clayton, and here three nests were found, one of which held four fresh eggs. It was twenty feet from the ground in a crotch near the top of a small white oak in a small grove at the edge of the town, and was compactly built of rootlets, weed stems, grasses and mud, well lined with fine grasses. The partiality this species shows for civilization, or at least for the proximity of man, was clearly evident here for none were seen anywhere, at any time, except in the close vicinity of the towns.

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NOTES ON BIRDS OF THE LABRADOR PENINSULA IN 1923.

BY HARRISON F. LEWIS.

Plate VII.

THE notes upon which this paper is based were made on or near the Gulf of St. Lawrence coast of the Labrador Peninsula, between Long Point of Mingan and Blanc Sablon, during the spring, summer, and early autumn of 1923. Leaving Quebec on May 1, 1923, I debarked at Esquimaux Point, on the southern shore of the

Labrador Peninsula, on May 4. On September 14 I embarked again on the steamer at Esquimaux Point, and on September 16 I arrived at Quebec. Much of the summer was spent in cruising along the coast in a motorboat.

As in previous years, Dr. C. W. Townsend has very kindly reviewed my paper prior to publication.

The weather on this coast was unusually cool during May and June, 1923. No large quantities of ice were encountered on the voyage from Quebec to Esquimaux Point, May 1-4, but later in the month easterly winds drove great quantities of heavy drift ice onto the coast in the Mingan Islands region, filling all the harbors, and extending so far seaward that practically no open water could be seen from shore. The harbor of Esquimaux Point did not become finally open for navigation for the summer season until May 24. There was a thin sheet of ice on open pools near Esquimaux Point on June 4 and a heavy white frost on the morning of June 15.

The migration of a few species of the Fringillidae in this region did not follow the usual course in 1923. Several local residents spoke to me of the absence of the usual large flocks of Juncos and small Sparrows in the spring. No such flocks were seen in this region in the spring of this year, so far as I know, although they were said to be conspicuous in most springs. Moreover, although I was afield and searching for birds daily in the Mingan Islands area from the time of my arrival on the coast until after the middle of June, when I proceeded farther eastward, I saw the three following species, which should have been common migrants, only in the numbers indicated: Snow Bunting, one on May 5; White-crowned Sparrow, one on May 23 and one on May 29; Tree Sparrow, one on May 20. During the summer White-crowned Sparrows were found breeding commonly, as usual, from Piashte Bay eastward.

A brief summary of the arrivals of various migratory species in the Mingan Islands region in the spring of 1923, as noted by me, is given below. Townsend and Bent have recorded¹ the dates of arrivals of migrants in this region on and after May 24, as observed

¹ 'Auk,' Vol. XXVII, No. 1, p. 1.

by them in 1909, and these dates agree in general very closely with the comparable dates here presented, although, as is normally to be expected, in the case of some species there are slight differences one way or the other in the dates of arrival recorded.

Species already present, May 3, 4, and 5.—Loon, Great Black-backed Gull, Herring Gull, Black Duck, Old-Squaw, Eider, Canada Goose, Crow, Pine Siskin, Snow Bunting, Fox Sparrow, Winter Wren.

ARRIVALS.

May 6. Greater Yellowlegs, Slate-colored Junco, Ruby-crowned Kinglet, Robin.

May 8. Scoters (not White-winged, probably Surf), Osprey, Savannah Sparrow.

May 9. Mergansers (probably Red-breasted), White-winged Scoter, Surf Scoter (definitely identified), Red-breasted Nuthatch.

May 10. Boreal Flicker, Purple Finch, White-throated Sparrow, Myrtle Warbler, Yellow Palm Warbler.

May 12. Wilson's Snipe.

May 13. Hermit Thrush.

May 14. Rough-legged Hawk.

May 15. Double-crested Cormorant, Pipit.

May 16. Song Sparrow.

May 18. Semipalmated Plover.

May 19. Horned Lark.

May 20. Yellow-bellied Sapsucker, Tree Sparrow.

May 23. Bronzed Grackle, White-crowned Sparrow.

May 24. Rusty Blackbird, Lincoln's Sparrow.

May 25. Brant, Tree Swallow. (Tree Swallows not observed by me on this date, but by Mr. Allen L. Moses and Mr. M. W. Armstrong.)

May 26. Semipalmated Sandpiper, Swamp Sparrow.

May 27. Spotted Sandpiper, Sharp-shinned Hawk, Pigeon Hawk.

May 28. Least Sandpiper.

May 29. American Scoter, Purple Sandpiper.

June 1. Black and White Warbler, Black-poll Warbler, Maryland Yellow-throat.

June 3. Barn Swallow, Wilson's Warbler, Redstart. (Barn Swallow not observed by me, but by Mr. M. W. Armstrong.)

June 4. Tern (Common or Arctic), Magnolia Warbler, Black-throated Green Warbler, Golden-crowned Kinglet, Olive-backed Thrush.

June 5. Nighthawk.

June 6. Yellow-bellied Flycatcher, Water-Thrush.

June 8. Tennessee Warbler.

June 9. Yellow Warbler.

June 11. Kingbird.

June 13. European Widgeon.

June 17. Alder Flycatcher.

In the region about Harrington and St. Mary's Islands many small birds perished about the last of May and the first of June from some cause unknown. I was not in that region at the time, but residents there described the destruction to me later in the summer. Small birds were found dead in large numbers, usually crouched in the dead grass of the year before, or in the entrances to the burrows of small mammals, as though they had died there at night while asleep. I was told that, in the yard about one house at Harrington, "half-a-bucketful" of these dead birds were raked up.

Mr. Allen L. Moses, of Grand Manan, New Brunswick, arrived at Harrington on June 9, after this loss of life had ended, but he found a number of the bodies of the victims and identified Lincoln's Sparrows, a Swamp Sparrow, a Water-Thrush, and a Myrtle Warbler.

An annotated list of those species concerning which observations of particular interest were made is given below.

ANNOTATED LIST.

1. *Larus delawarensis*. RING-BILLED GULL.—A colony containing from 200 to 400 pairs of breeding Ring-billed Gulls was visited by me on July 13. This colony was densely massed on the southwest corner of Fog Island, which is one of the outer islands on the Canadian Labrador coast, about 20 miles west of Cape Whittle. Some of the nests had been

placed on the sides and bottom of a small valley and some on the higher land south of the valley. No nests of this species were found on the island at a distance from this congested group, which occupied a relatively small area.

As we approached the colony, the old birds rose into the air, forming an extraordinarily dense cloud of Gulls, while the downy gray, partly-fledged young scuttled in large numbers through the herbage in every direction, seeking shelter and looking like a swarm of giant lice. In places in the colony where the ground was chiefly bare rock, with here and there a few closely-grouped plants, these patches of herbage were found to be crowded with young Gulls. Most, but not all, of the eggs had hatched and nests which the young had left had been trampled out of recognition.

This colony was observed at close range from a blind for a short time. A good deal of fighting occurred among the adult birds, but no bird seemed to pay any attention to other members of the colony outside of its own immediate vicinity. Each bird repeatedly uttered at short intervals a single-syllabled cry, "Wow," in a loud, shrill voice. The composite result was a terrific din, which was increased by the notes of the young and by the cries of the Caspian Terns which nested close beside the Gull colony. The rings on the bills of the adult Gulls were very easily seen from the blind.

No doubt this is one of the colonies of Ring-billed Gulls which were found in this vicinity in 1884 by M. A. Frazer.¹

On August 12, I visited the island at Point au Maurier where Dr. Charles W. Townsend found,² in 1915, a colony of these birds containing some five hundred individuals. I had found less than a dozen pairs of Ring-billed Gulls nesting on this island in 1921, but on this visit in 1923 I saw about 100 adults and about 50 young there. There is much vegetation on this island and consequently the young Gulls are difficult to find. Some of the young, when handled, regurgitated lance (small fish) and, in some cases, large, fat, white maggots. Little heaps of ripe blueberries, apparently regurgitated by the old birds for the use of the young, were seen here and there on the rocks. Some of these heaps were still wet when observed.

2. *Sterna caspia imperator*. COUES' CASPIAN TERN.—The only Caspian Terns which I have seen on the Labrador coast were found breeding on Fog Island on July 13, in close association with the Ring-billed Gull colony on the island. The Caspian Terns' nests were not scattered among those of the Gulls, but were by themselves on a high, rounded prominence on the western side of the combined colony. The area occupied by the Terns was bordered on the west by the sea, and on the three other sides by the nesting-grounds of the Ring-billed Gulls. I counted 25 nests of Caspian Terns, and it is probable that there were in

¹ "An Ornithologist's summer in Labrador," 'Orn. and OöL.,' Vol. 12, p. 18.

² "In Audubon's Labrador," 'Auk,' Vol. XXXIV, No. 2, p. 141.

all between 25 and 30 of their nests, as some from which the young had gone were probably unrecognizable. This is, no doubt, the colony found by Frazar in 1884,¹ and reported by him to contain about 200 pairs of birds at that time.

The Caspian Terns had little or nothing in the way of nests, except shallow depressions in the grass and herbage, sometimes with a little lining of dead grass. Two eggs were the largest number found in any one of these nests. The eggs in about one-quarter of the nests had hatched, and the young Terns were hiding in the grass with the young Ring-billed Gulls.

When the colony was approached the old Terns flew excitedly about with hoarse cries of "*carr-r-r-r, carr-r-r-r,*" and when we handled their young they redoubled their cries and hurled themselves repeatedly at our heads, turning sharply when only about two feet distant. It was impossible to avoid involuntarily dodging their fierce rushes except by refraining from looking up at them.

As observed from the umbrella-blind, this colony was very interesting. The tops of the heads of the adults were still solid black. There did not seem to be as much fighting among the Terns as among the Ring-billed Gulls, but at least one fight between adult Terns was seen. One of the combatants fought from the air.

A downy young Ring-billed Gull strayed into the area occupied by the Terns, where it was fiercely set upon by an old Tern, which chased it toward its own kind, striking it again and again with open beak. At each blow the poor little Gull was knocked sprawling on the rock and when at last it passed across the border of the Tern colony, where the old Tern abandoned the pursuit, it was crying piteously. Thereupon its tormentor gave a triumphant wag of the tail and shouted hoarsely, "*ha-ha-har-har-har-hark a' the yellin'!*" This is the usual cry of the adult Terns when undisturbed among their nests. It sounded ludicrous in view of the fact that old and young, Terns and Gulls, kept up a continual uproar, and the air resounded at all times with "*yellin'.*" Two young Terns with open mouths were seen to run up to an old Tern, begging for food with a little cry of "*cheep, cheep, cheep, cheep,*" etc. The old bird was not inclined to grant their request, but viewed them coldly and shouted, "*ha-ha-har-har-har-hark a' the yellin'!*", then turned its back on them. As the first part of this cry is given, the bird's bill is open and lowered, but with the closing phrase the head is thrown upward until the bill points almost straight up.

3. *Oceanodroma leucorhoa*. LEACH'S PETREL.—On the outermost of the Boat Islands, which lie a short distance southwest of St. Mary's Islands, I excavated on July 20 a burrow containing a Leach's Petrel, which, after examination, was liberated. In another burrow, at some distance, I found a soiled Petrel's egg unaccompanied by a bird. Owing to the difficulty of distinguishing with certainty the entrances of

¹ Loc. cit.

Petrels' burrows from the entrances of the burrows of Puffins and small mammals, I cannot estimate the size of the Petrel colony on this island. I have not yet found this species elsewhere in Labrador, although it has been recorded there by several previous observers.

4. *Phalacrocorax carbo*. CORMORANT.—The Common Cormorant is not yet "extirpated as a breeding bird in North America." On July 17, Mr. M. W. Armstrong, of Bridgetown, Nova Scotia, and I found several pairs nesting on the cliffs, about ninety feet high, on the south side of Lake Island, of which island Cape Whittle is the southwestern extremity. The nests were about one mile east of the Cape, and were chiefly on ledges on the upper half of the cliff. From observations made on July 17 and 18 we concluded that the number of occupied nests of this species at this point at that time was not less than 11, was not improbably as many as 14, and was possibly greater than 14. A number of pairs of Double-crested Cormorants nested with the Common Cormorants.

With $\times 6$ binoculars we observed the adult Common Cormorants in flight at distances of from 100 to 200 feet and on their nests at distances of from 35 to 100 feet. In this way we saw distinctly the yellow area of bare skin at the base of the lower mandible, the white throat patch, and the white patches on the flanks, although at the time of our observations the white markings on the flanks were very small. We saw Common Cormorants and Double-crested Cormorants perched near one another, when the larger size of the former species was easily distinguished. One old Common Cormorant remained on her nest only ten or twelve feet below me, while with my naked eye I studied her appearance in detail at my leisure. When she shifted her position on the nest I could see that she had both eggs and newly-hatched young under her. I could not approach nearer to her and when I went away she had not left her post.

We were able to reach one nest containing four partly-fledged young Common Cormorants, of which we banded three. The fourth one would not lift its head erect, and so it remained just beyond our reach. While I had one of these young ones in my hands, I carefully counted its tail-feathers, which had burst out of their sheaths, and which I fingered one by one. There were fourteen of them. Young Common Cormorants in the nest, even the youngest of them, can be distinguished at first glance from young Double-crested Cormorants, by the fact that they have white faces, including white foreheads, bare of feathers. The bare foreheads of nestling Double-crested Cormorants are nearly black. Strangely enough, the voices of the nestling Common Cormorants seemed to our ears to resemble some of the notes of the Robin! The insides of the mouths of these young birds were flesh-color, while the insides of the mouths of the adult Common Cormorants were yellowish. Some of the Common Cormorants' nests still contained eggs.

5. *Mareca penelope*. EUROPEAN WIDGEON.—A specimen in the plumage of the female, which I recorded as *Mareca americana*,¹ proves

¹ 'Auk,' Vol. XXXIX, No. 4, p. 516.

upon re-examination to be the present species. It was obtained at Bonne Esperance in November, 1919, by John Goddard, and is now in the Victoria Memorial Museum, Ottawa. Mr. P. A. Taverner, who supplied me with the record originally published, has kindly drawn my attention to the necessity for this correction. The species has previously been recorded from the Canadian Labrador by Townsend,¹ who found it in the collection of Mr. Johan Beetz, at Piashte Bay, in 1915.

On the morning of June 13, 1923, Mr. M. W. Armstrong and I were walking on one of the extensive reefs lying south of, and attached to, Niapisca Island, which is one of the Mingan Islands and is six or seven miles west of Esquimaux Point. We returned to the shore of the island proper at a point which we had not previously visited, where we climbed a steep beach or "seawall," about ten feet high, composed of loose shingle piled up by the waves. This beach sloped down toward the island almost as steeply as to seaward, and immediately behind it lay a small, shallow pond of fresh water, containing several small islets. As we topped the beach we held our binoculars in readiness for examination of the bird-life which we might surprise in this pond. Two or three birds of common species were disturbed by our sudden appearance, but as I examined the pond through my binoculars (x 6), my gaze was suddenly arrested by a Duck of moderate size which was almost motionless in the water. The bird was below the level of my eye at a distance of from 150 to 200 feet, and the sun was at my back. I saw at once that the crown of the bird's head was white or whitish, and exclaimed to Mr. Armstrong, "There's a Baldpate!" Even before I finished speaking, however, it was impressed upon me very clearly and distinctly that, aside from the crown, the Duck's head and neck were of a solid rusty-brown color. A moment later the Duck took to flight, and at the same time three other similar Ducks, which I had not previously seen, arose from one of the small islets in the pond, and the four flew away together. In flight they appeared as gray Ducks, with a large patch of white on each wing, light-colored underparts, and black under tail-coverts. I received the impression that one of the Ducks was duller in color than the others, but I cannot be certain that this was correct. When I asked Mr. Armstrong what he had seen he told me that his gaze had been riveted upon the three Ducks on the islet and that he had not seen the one Duck in the water until all four flew. He had been very strongly impressed with the fact that the three Ducks on the islet had rusty-red heads and necks, with white or whitish crowns, which markings, under the excellent conditions of observation, showed very clearly. We followed the strange Ducks, and flushed them twice more, but they became wilder at being disturbed, and we did not succeed in seeing anything more of the details of their plumage. After a careful consideration of our observations, and consultation of books and colored plates

¹ 'Auk,' Vol. XXXIV, No. 2, p. 136.

and other ornithologists, I am forced to conclude that these four Ducks were European Widgeons, of which at least three were drakes.

6. *Nettion carolinense*. GREEN-WINGED TEAL.—In a small pond of fresh water on Fog Island we saw on July 13 three Green-winged Teal, two drakes and a duck. The birds were seen at close range under excellent light conditions with x6 binoculars, and their characteristic markings were very conspicuous and were easily noted.

7. *Glaucionetta* (sp.?). GOLDEN-EYE (sp.?).—On Green Island, near Kégashka, I saw in a small fresh-water pond on July 9 a female Golden-eye and her brood of 9 downy young. There are no trees on this island, which is unsheltered from seaward and is more than a mile from the mainland. It would be interesting to know where these young birds were hatched. It is probable that they were American Golden-eyes.

8. *Histrionicus histrionicus histrionicus*. HARLEQUIN DUCK.—A flock of 9 or 10 Harlequin Ducks, at least one of which was an adult drake, was seen on July 18 among the outer Cormorant Rocks, off Wapitagan.

9. *Somateria mollissima dresseri*. EIDER.—In spite of the damage done by white foxes and bad weather in 1922,¹ this species returned to the Canadian Labrador coast in good numbers in 1923. The breeding season this year was very favorable for the Eider and unusual numbers of its young were raised.

It may be worth noting that, among two or three large flocks of Eider drakes seen near Wapitagan on July 18, practically every individual showed more or less of the eclipse plumage, while some were almost entirely in eclipse.

10. *Arquatella maritima maritima*. PURPLE SANDPIPER.—A pair of birds of this species in spring plumage were observed on the outer reef of an islet outside of Sea-Cow Island, near Esquimaux Point, on May 29, by Mr. Allen L. Moses and myself. They were very tame and permitted us to study them at close range at our leisure with binoculars. It was on May 29, 1909, that Townsend and Bent observed three of this species and secured one at Quatachoo.²

11. *Crocethia alba*. SANDERLING.—This species was very common at Esquimaux Point during the period September 8–13, and probably longer. During this period I saw from 40 to 125 Sanderlings each day without going more than a mile from the village.

12. *Circus hudsonius*. MARSH HAWK.—On August 20, I saw an individual of this species at Esquimaux Point and on September 3 I saw one at Betchewun.

13. *Haliaeetus leucocephalus alascanus*. NORTHERN BALD EAGLE.—At the mouth of a large brook which flows into the head of Ragg Bay, near Betchewun, I saw an adult of this species on September 3.

¹ 'Auk,' Vol. XL, No. 1, p. 136.

² 'Auk,' Vol. XXVII, No. 1, p. 13.

*14. *Sphyrapicus varius varius*. YELLOW-BELLIED SAPSUCKER.—On May 20, as I was searching for birds in woodland a short distance west of Esquimaux Point, I suddenly heard the loud caterwauling which is one of the characteristic cries of the Yellow-bellied Sapsucker. Turning, I saw a small Woodpecker clinging to a telegraph pole not far from me. Before I could see more it flew into stunted fir woods close at hand. I followed. It was very restless and shy, but at last I obtained a view of it for about one minute at a distance of 15 feet. I noted the spotted wings with the prominent white mark along the front edge of each, and the black and white striping on the side of the neck. The crown of this individual was solid black, with no red visible anywhere. This is the first record of the Yellow-bellied Sapsucker in the Labrador Peninsula.

15. *Tyrannus tyrannus*. KINGBIRD.—On June 11, I saw a bird of this species about the buildings at Betchewun. It was observed at a distance of 30 feet and its characteristic markings and cries were noted.

16. *Empidonax traillii alnorum*. ALDER FLYCATCHER.—Audubon stated that he found *Muscicapa pusilla* "on the coast of Labrador in considerable numbers," and since he found one nest with eggs in a bush, while the nest of the Yellow-bellied Flycatcher is usually built on the ground, Townsend and Bent have presumed that this nest was an Alder Flycatcher's.

On June 11, 1921, I heard two Alder Flycatchers at Lake Patterson, near Mingan, but was unable to obtain even a glimpse of them.¹

On June 25, 1922, I heard two Alder Flycatchers near Esquimaux Point, but a long chase among dense growth resulted only in my getting a distant glimpse of a small bird slipping away among the leaves.

On June 17, 1923, I distinctly heard two Alder Flycatchers on Esquimaux Island, near Esquimaux Point, but had no opportunity to search for them then.

On August 22, 1923, while I was camped on this same Esquimaux Island, I heard two Alder Flycatchers nearby in the early morning. Stepping from the tent, I had the satisfaction of obtaining at last a satisfactory view of an Alder Flycatcher in the Labrador Peninsula. An individual of that species was perched on top of the camp wood-pile, in the open, about ten feet from me, where it "sang" several times before flying back into the bushes. I was able to see very clearly the form and coloration characteristic of the species, including the whitish underparts and white throat.

On August 24 a party of 4 or 5 Alder Flycatchers came about this camp, and 2 or 3 of them were very clearly seen, and the whitish underparts and white throats noted. One old bird was seen to feed a young one. The species was not recorded after August 25, when two birds were observed.

¹ 'Ornithological Biography,' 1839, Vol. 5, p. 289.

² 'Birds of Labrador,' Proc. Bost. Soc. Nat. Hist., Vol. XXXIII., p. 380.

³ 'Auk,' Vol. XXXIX, No. 4, p. 512.

17. *Otocoris alpestris alpestris*. HORNE LARK.—On the point of the mainland just east of the entrance to Washatnagunashka Bay I heard a Horned Lark singing on June 28. A little later on the same day and on the same point I saw a female Horned Lark and watched her to her nest, from which I soon flushed her. The nest contained three young in the down. A few minutes later I saw another pair of Horned Larks, about a quarter of a mile distant from the first pair, but in this case I did not succeed in finding the nest. This place is about 33 miles west of Natashquan, the most western point on this coast from which breeding Horned Larks have been reported previously.¹ It is not surprising, however, that Horned Larks breed about Washatnagunashka Bay, for the coastal strip there is as Arctic in appearance as it is at Cape Whittle, more than a hundred miles farther eastward.

18. *Quiscalus quiscula aeneus*. BRONZED GRACKLE.—On May 23, I found two of this species together beside a small brook in the village of Esquimaux Point. When disturbed they flew to the roof of a house and later flew away westward. On May 28, a single Bronzed Grackle was seen in the same village.

19. *Carpodacus purpureus purpureus*. PURPLE FINCH.—One seen singing at Mingan on May 10. At Esquimaux Point I saw two on June 5, and a single bird on five other occasions, from May 12 to June 9, as well as one on August 27. I observed one at Betchewun on June 21.

20. *Astragalinus tristis tristis*. GOLDFINCH.—On July 3 Mr. M. W. Armstrong and I flushed a Goldfinch from the ground on a grassy area in Natashquan village. It alighted in a tree, and later flew from tree to tree. We had several good views of it with x 6 binoculars at distances of about 100 feet. The black wings and tail were clearly seen, but we did not succeed in distinguishing the black cap, as the bird, when under observation, was usually above the level of our eyes. This Goldfinch was bright yellow on the breast and underparts, but was rather dull greenish yellow on the back. It uttered the familiar notes of "per-chic-or-ee" (in flight) and "we-e-e-e-e," with rising inflection, and also a few bits of song, and it flew with the usual wavy flight of this species.

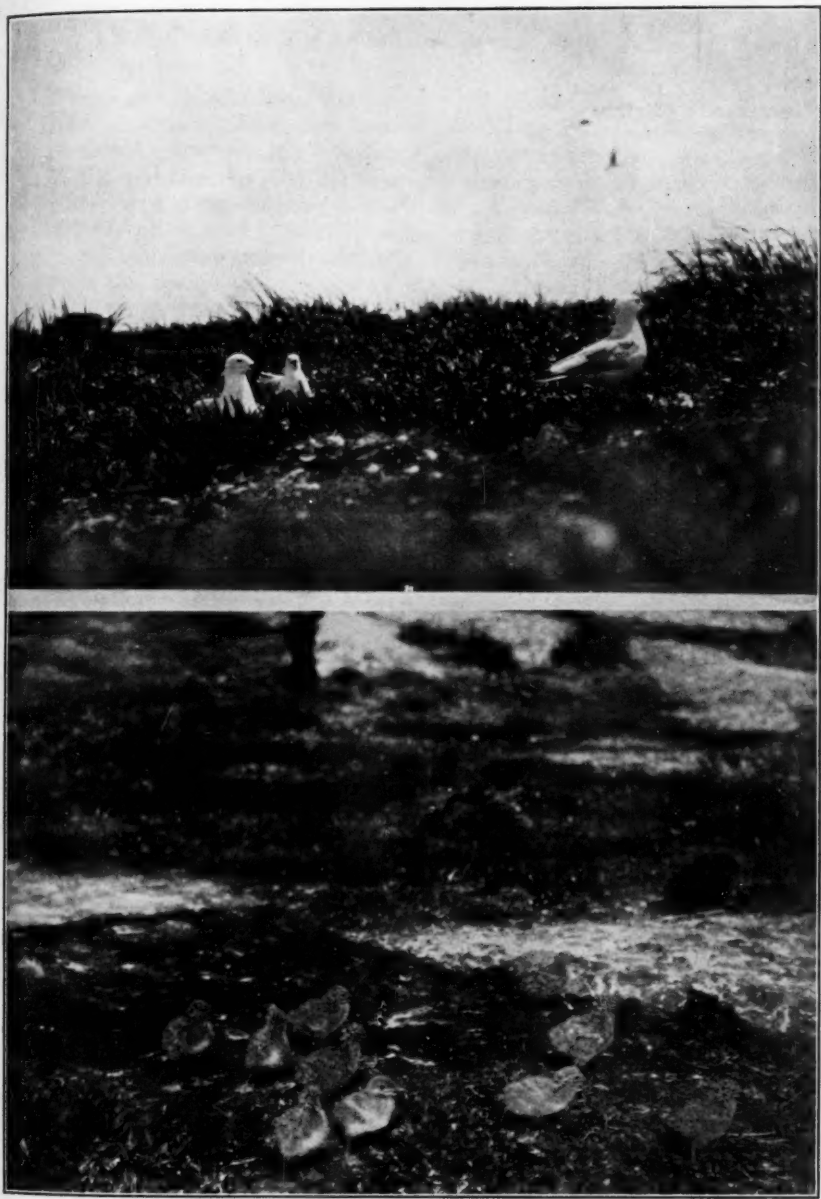
This is the second Labrador record of the Goldfinch, and the first record of the actual occurrence of a specimen on the Peninsula, as this species has hitherto appeared in the list of Labrador birds because of Kumlien's record of "an adult male caught on shipboard, August 22, 1877, off Cape Mugford, Labrador."²

21. *Spizella passerina passerina*. CHIPPING SPARROW.—The first record of this species in the Labrador Peninsula was based on individuals seen at Mingan in 1922.³ In 1923 I observed it only at Natashquan, where on July 6, I found three males in full song in as many different parts of

¹ 'Auk,' Vol. XXVII, No. 1, p. 15.

² Bull. U. S. Nat. Mus., No. 15, p. 76.

³ 'Auk,' Vol. XL, No. 1, p. 137.



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RING-BILLED GULLS.

Fig. 1. On Nesting Area.

Fig. 2. Young with One Young Caspian Tern.

Fog Island, Quebec, July 13, 1923.

the village. Each of them was carefully studied and identified with the aid of binoculars. One of these birds was seen at its regular singing-station on several dates from July 2 to July 7, and another one was observed on July 3, as well as on July 6. From the appearance and actions of the birds it seemed probable that each one had a mate and a nest nearby, but this was not verified. Natashquan is about 95 miles east of Mingan.

22. **Melospiza melodia melodia.** SONG SPARROW.—At Esquimaux Point this species was observed on May 16 (2), June 3 (1), June 5 (1), and June 18 (1). At Betchewun the Song Sparrow was observed on June 20, 21, and 22, August 28, 29, 30, and 31, and September 1, 2, 3, 4, 5, and 7, one or two birds being noted on each of these days. Song Sparrows were also seen at Agwanus on June 29 and 30 and July 1, at Natashquan on July 3, 4, and 5, and at Romaine on July 12. The largest number seen on one day was 3 on July 3. Mr. Allen L. Moses informed me that he saw a Song Sparrow near his tent on St. Mary's Islands on June 30.

23. **Hirundo erythrogastra.** BARN SWALLOW.—Mr. M. W. Armstrong informed me that on June 3 a Barn Swallow flew past him on the beach at Esquimaux Point. He saw its ruddy breast and long, forked tail. Mr. Allen L. Moses informed me that he saw a Barn Swallow, possibly the same one as the one seen by Mr. Armstrong, on Esquimaux Island, near Esquimaux Point, on June 4. In this case the Swallow was flying back and forth over a pool at a distance of about 50 yards from Mr. Moses, and was under observation for about half an hour. Its ruddy underparts, long, forked tail, and dark upperparts were clearly seen. Both of these observations were reported to me verbally on June 4 and I have every confidence in them. The only previous record of this species in the Labrador peninsula is that of Packard¹ at North-west River, Hamilton Inlet, where it was recorded as breeding.

24. **Bombycilla cedrorum.** CEDAR WAXWING.—At Betchewun I saw two individuals of this species on June 20 and four on June 21.

25. **Dendroica palmarum hypochrysea.** YELLOW PALM WARBLER.—At Mingan I observed a male of this species in song on May 10, and at Esquimaux Point a pair on May 20, and single birds on May 23, and June 4, 6, and 9. I also saw three individuals in one group at Betchewun on September 6.

26. **Seiurus aurocapillus.** OVEN-BIRD.—On St. Charles Island I heard an Oven-bird singing in thick woods on June 19. On the mainland at Betchewun I heard three individuals singing repeatedly on June 21. In each case the song was clear and unmistakable. At Betchewun on September 1 an Oven-bird walked nervously about on the lower branches of a small conifer beside a wood-road at a distance of 8 or 10 feet from me, and I saw its markings with the greatest clearness. Betchewun and St. Charles Island are farther eastward than other points on this coast from which the Oven-bird has been reported.

¹ 'The Labrador Coast,' New York, 1891, p. 416.

27. *Geothlypis trichas trichas*. MARYLAND YELLOW-THROAT.—On July 14, a short distance inland from the western side of Coacoachou Bay, I heard four of this species in song, and saw one clearly at close range. This is slightly farther east than Old Romaine, where the species has been recorded by Townsend.¹

28. *Sitta canadensis*. RED-BREASTED NUTHATCH.—This species was observed in the Mingan Islands region on May 9 and 29, June 25, August 21 and 27, and September 1, one individual being noted on each of these dates. At Harrington it was observed as follows: August 15 (1), 17 (1), 18 (3) and 19 (3). Mr. Allen L. Moses told me that several birds of this species came aboard the S. S. "Labrador" on August 18, between Mutton Bay and Bonne Esperance. In view of these and previous observations it would appear to be well established that the Red-breasted Nuthatch is a regular and not uncommon summer resident in the southern part of the Labrador peninsula.

As there are almost no trees on the Harrington Islands, the Red-breasted Nuthatches there commonly seek food about wood-piles, buildings, and fences and on the ground. On August 19 I saw one perched on the bare solid rock, from which it made sallies into the air above it after insects, much as a Flycatcher would do.

29. *Regulus satrapa satrapa*. GOLDEN-CROWNED KINGLET.—A female was distinctly seen by me near Esquimaux Point on June 4.

*Canadian National Parks,
Ottawa, Canada.*

OBSERVATIONS AND BANDING NOTES ON THE BANK SWALLOW.

BY DAYTON STONER.

Plate VIII.

OWING not only to the wide-spread interest in and popularity of bird banding but also to the fact that this field of endeavor seems destined to throw much light upon many activities of migratory birds, suitable districts where such work can be carried on are being continually selected for this purpose. In this connection it has seemed to the writer that the establishment of a bird banding and trapping station in some favorable locality in Iowa

¹ 'Auk,' Vol. XXXIV, No. 2, p. 139.

where the work might be continued on an intensive and extensive scale season after season would be highly desirable. Probably no place in the State is better adapted to such efforts than the region about the Iowa Lakeside Laboratory in Dickinson County, north-western Iowa.

Therefore, it was with a considerable degree of satisfaction that, during the early summer of 1923, the work was inaugurated here and, it is hoped, will be carried forward with ever-increasing enthusiasm and with far-reaching results.

The Laboratory grounds themselves, at present consisting of approximately five acres, and located on Miller's Bay on the west shore of West Okoboji Lake, furnish a variety of habitats for nesting birds while the immediate region offers additional attractive and diversified nesting sites for many species. Deep woods, marshes, open fields, partially cleared areas, the lake shores, cultivated fields, and roadside gravel pits, all offer a wealth of possibilities for birds when the important and serious business of nidification and rearing of the young occupies their full attention.

Immediately upon our arrival at the Laboratory on June 18, Mrs. Stoner and the writer set out to discover as many nests as possible. The occupants, both adults and young, were to be the prospective wearers of the legend-bearing aluminum bands which are furnished by the United States Biological Survey. We were fortunate in having a motor car at our disposal and by this means we could go quickly and easily from one nesting locality to another and so cover a greater amount of territory more expeditiously than would otherwise have been the case. The work was continued without intermission until July 16, during which time 242 individuals, both adults and young, representing 19 species, were banded.

Of the total number of birds banded, Bank Swallows (*Riparia riparia*) formed a little more than 31 per cent. Although notes and incidental observations were made upon practically all the species banded, it seems best to withhold general comment until at least another season's work has been completed. However, since special attention was given to the Bank Swallow, some items of seemingly worth-while interest concerning this species

have been gathered from our efforts of 1923 and they are here brought together for consideration.

While it is perhaps true that this bird is not more abundant than some other species in the region its characteristic habit of nesting in more or less readily accessible colonies gives it a conspicuous place in the bird fauna about the lake. Owing very largely to this proclivity the possibilities were great for finding a considerable number of nests, and consequently, at this season, of adults and young as well. Accordingly, our records for the summer show that 19 adults and 57 immature birds were fitted with bands. The latter represent the occupants of 14 nests, thus giving an average of about four young to each nest. Four of the nests contained five young each; the remaining nests each contained less than five young.

NATURE OF NESTING SITES.

From the standpoint of automobile roads Dickinson county is fortunate in possessing many outcrops of water-laid gravel of Wisconsin age and pits of considerable size are of frequent occurrence where this material is hauled away for use in road construction and other building work.

Bank Swallows and sometimes also Tree Swallows find suitable places for constructing nests in the sheer walls of some of these excavations although it does not necessarily follow that the largest wall exposure attracts the greatest number of birds. The largest gravel pit that was investigated—it was about 35 feet deep and extended a little over 100 yards in the form of a semi-circle—attracted only about a dozen pairs of Bank Swallows.

The largest colony in which work was done was located in a roadside gravel pit a half-mile southeast of the Laboratory but individuals from four other colonies of smaller size were banded during the summer.

Sometimes the banks of a small cut along the road appear to offer possibilities for these birds and here from two to three or a half dozen families may excavate their burrows in the more or less sandy or gravelly soil. Two such colonies were investigated.

Another small colony nesting in the black sandy loam of the

banks of the Little Sioux river one and one-half miles west of Milford was visited and some of its members were banded. Numerous other colonies of varying sizes were observed but conditions in only five were actually investigated.

The face of the most thickly populated gravel pit—the one a half-mile southeast of the Laboratory—extended in a semi-circle for 100 feet. The north end of the exposed face was three feet high and the opposite end was about eight feet high while the greatest height, in that portion of the pit from which the most gravel had been removed, was about twelve feet. This part of the pit was about 100 feet from the main highway. It was here that most of our work on this species was done and as this place illustrates typical conditions the following discussion is based largely on our observations of this colony.

On June 19 the face of this pit bore 163 burrows in various stages of completion. Some of the burrows were barely begun, other fully completed ones were three feet or more in depth. A few burrows were only about twenty inches from the top of the pit; most were more than three feet from the bottom. Already nests had been built in some, while in others nest construction had not been started. We slightly enlarged the diameter of one burrow and the nest was found to contain four eggs. After making our observations the burrow was not filled in to its original size but was left in its enlarged condition. Probably on this account the nest was abandoned. However, in all burrows which we subsequently enlarged, effort was made to restore them as nearly as possible to their original size and shape by the addition of moist sand. Burrows treated in this way were never abandoned.

On June 22 the number of burrows in the pit had been increased to 186 and apparently the birds were augmenting the number daily.

As we sat quietly in the car parked at the roadside opposite the gravel pit the members of the colony went about their business of carrying away sand and bringing grass and feathers for the nests, apparently undisturbed. However, when we alighted and began investigating the pit they left the burrows and flew around above our heads uttering continually their characteristic weak twitter and occasionally alighting on the nearby telephone wires;

some time elapsed before they could reassure themselves that it was safe for them to return.

BURROW EXCAVATION.

This activity was taken part in by both male and female and, having selected a site, excavation began. Often the birds seemed to rest partly on pebbles which projected from the wall of the bank, but the long slender claws are most effective clinging organs. Thus supported, the outspread tail aiding in this, a small concavity was soon formed as the bird pecked the sand and gravel throwing some of the bits out by a rapid side-to-side movement of the head.

At intervals a slight fluttering of the wings occurred as if the burrower were dusting away the excavated material which had accumulated at its feet. As the hole became deeper some of the sand and pebbles were carried away in the bill. Excavation was carried on for a variable length of time but I believe that the depth of the burrow and hence the time spent in its excavation may be, to some extent at least, correlated with the condition of the reproductive organs. That is, if the eggs are not fully developed and the digging is not difficult, the burrow may extend back into the bank for three feet or more. If, on the other hand, ovulation is well along the burrow is likely to be shorter.

On June 20 two burrows were opened; one, two feet deep and apparently unfinished contained no nest; the other, in which a nest had already been constructed, was but eighteen inches deep and extended a few inches back of the nest. Other tunnels which were examined later ended in an enlarged chamber in which the nest was placed, while in some no appreciable terminal or subterminal enlargement of the burrow was apparent.

Frequent falling away of the face of the bank due to rains and working of the pit by laborers necessitated almost constant excavation by these industrious bank dwellers during the first part of the season in order that the burrows be kept at a proper depth. Later on, after actual nidification had been completed, further excavation was discontinued even though portions of the bank fell away, resulting at least in more or less exposure of the nest to sunlight. Sometimes nests were destroyed in this manner.

Practically all the burrows of a Bank Swallow colony on the Little Sioux river that was visited on July 12 had been excavated to a greater depth than those in the gravel pit. Possibly the easier digging in the black loam and sand there was responsible for this condition. One burrow that had been excavated by Bank Swallows, presumably, and was among the lot occupied by the members of this colony, contained four fledgling House Sparrows in good condition and about ready to leave the nest. The rather unusual abode for this all too abundant pest again illustrates the resourcefulness and adaptability which, in large measure, account for the success of the species. It would be of interest to know if these birds had driven out the rightful occupants of the burrow after the latter had performed the excavation and had taken up their abode therein.

NEST CONSTRUCTION.

This activity also extended over quite a period of time. Birds carrying nest materials were seen on our first visit to the pit on June 19. On June 23, both burrows and nests were under construction, though several of the latter now contained eggs. Evidently housekeeping was beginning in earnest. The nests were placed at varying distances from the mouths of the burrows, sometimes barely a foot, while again they could scarcely be seen even with the aid of a pocket-flashlight. They were composed very largely of grass with usually a few feathers for a lining. All the feathers seemed to be those from domestic fowls. Curiously enough none but white ones were ever discovered in the nests and although we made some effort to find out if white fowls were more plentiful in the vicinity than colored ones our investigations did not prove this to be true. Do the Bank Swallows have a peculiar failing for white feathers and so go to some pains to select them for lining their domiciles?

By June 28, most of the nests in the pit had been completed and egg-laying and incubation now made up the principal business of the birds.

BANDING OPERATIONS.

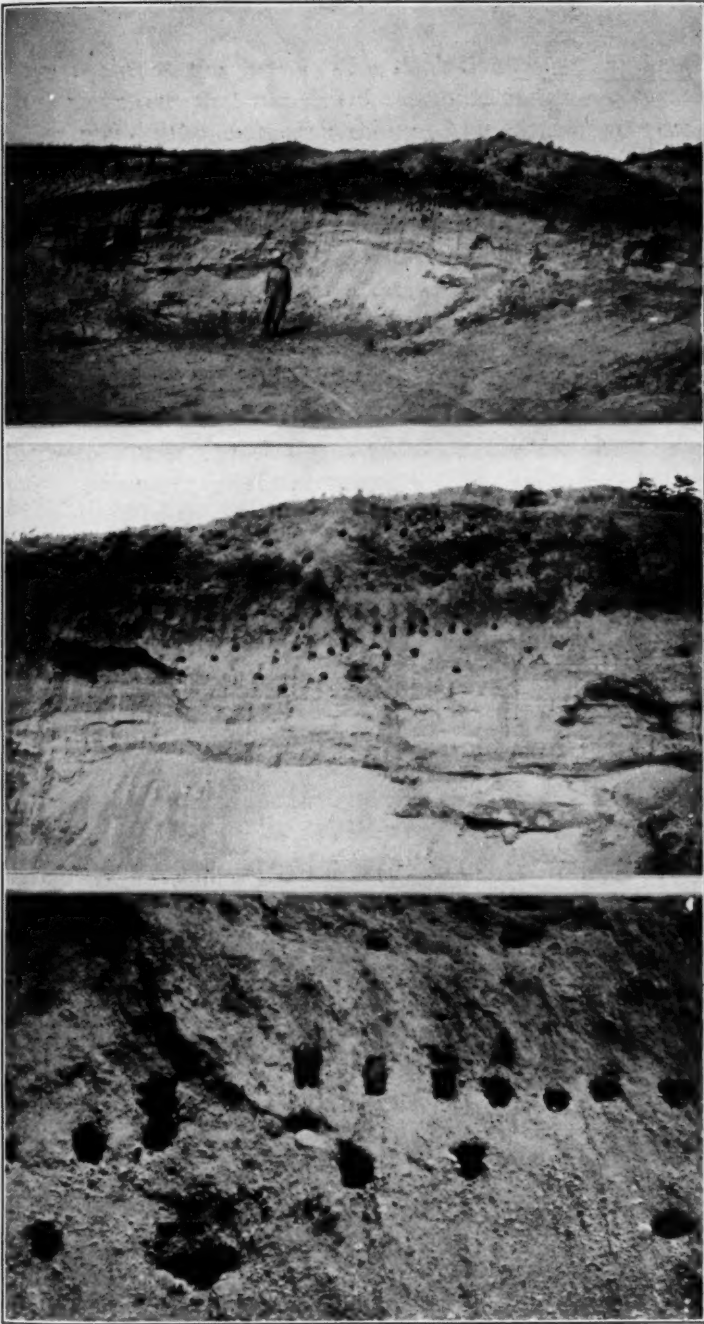
After having been disturbed a number of times by our visits the members of the Swallow colony on our near approach mostly

took to flight, sometimes circling about for quite a while before alighting at the nest again. Presently, one or two of the more daring ones would return to a burrow and soon the others would follow. As the season wore on an increasingly greater number of individuals remained in the burrows for a longer time following our arrival. No doubt they considered themselves better protected there, now that most of the burrows were of some depth. Perhaps also the instinct to protect and incubate the eggs at any reasonable cost restrained them.

In attempting to secure adult birds for banding it seemed best to adopt a scheme whereby they might be captured as they left the burrows. Accordingly, a heavy wire was bent in the form of a circle about two feet in diameter and mounted on a long wooden handle. A conical bag of heavy mosquito netting was then made fast to the ring. This apparatus could be held easily in front of a single burrow or several, in case they were close together, and if a sufficient degree of watchful waiting were indulged in by the operator a successful capture was the result—provided, of course, that the burrow was occupied.

- We found that after the first dispersal of the members of the colony on our approach the most advantageous means of securing examples for banding was to await patiently the return of an individual or two individuals to a certain burrow, then, keeping the opening of the burrow constantly in sight, to rush toward it with the net, cover the opening and wait for the birds to fly out. Sometimes the occupants emerged immediately; at other times no end of beating on the face of the pit or on the turf above the burrow would cause the birds to leave and so after waiting for what seemed more than a reasonable length of time the net would be removed for a look into the burrow when out would dash the occupants to the discomfiture of the would-be captors. Time after time did this take place.

When adult birds were first released and attempted to fly after being banded they seemed to waver a little and to have their sense of equilibrium in the air somewhat disturbed. This was exhibited by a more rapid flapping of the wings and apparent uncertainty of direction and control. I have noticed this feature to be more marked in this species than in any of the more than



NESTING SITE OF BANK SWALLOWS.
DICKINSON CO., IOWA.



thirty that I have banded. Very shortly, however, the bird becomes accustomed to the slight weight and pressure of the band and goes blithely on its way apparently neither inconvenienced nor discommoded in any way by its presence. Perhaps the small size, light weight and delicate adjustment of these little creatures cause them to be more responsive than some other birds.

The first young were banded on July 5 when they were about five days old. Five nestlings occupied this nest which was eight inches from the face to the pit.

In securing the birds for banding, the burrow was carefully enlarged so that a uniform diameter was maintained until the nest was reached. Before digging was begun a pellet of excrement which had been deposited by one of the young was noticed at the edge of the nest nearest the opening of the burrow. This indicated that a visit by the adult birds had not been made since defecation had occurred, for the nesting habits of Bank Swallows are very clean and the adults remove the pellets of the young as they are cast. During a moment's observation before the young were removed one of them scrambled to the side of the nest nearest the opening of the burrow deliberately turned around, elevated the posterior extremity and passed a pellet of excrement over the edge of the nest, then crawled back away from the light.

As the birds grow older they apparently instinctively leave the nest to perform the act of defecation and we came to look upon the presence of the pellets in the burrows as a sure sign that the nest was occupied even though it could not be seen without enlarging the burrow.

After the young birds were banded they were placed in the mouth of the burrow and immediately began to scramble back toward the nest using both feet and wings to aid them in the effort.

Moist sand and gravel were then used to build in the floor of the burrow to the original level, care being taken to leave the reconstruction smooth. Incidentally, it may be mentioned that all five of these birds successfully surmounted the difficulties to which fledgling Bank Swallows are subjected in a state of nature and left the nest wearing bands numbered 115701, 115702, 115703 115704 and 115705.

Most of the nests in this pit still contained eggs on July 7. However, on July 9, in a shallow roadside cut through black loam and small rocks about two miles north of the Laboratory, three nests of Bank Swallows containing fully fledged young about ready to leave the nest were discovered. One of the nests contained, besides the five fledglings, the body of a dead adult bird literally alive with fly maggots. In spite of the unsavory atmosphere and the presence of the moist decaying body of one of the (presumably) parent birds, the youngsters appeared to be in a flourishing condition and were probably being fed by the other parent.

By July 10, most of the eggs of the gravel pit colony had hatched and three days later practically all the inhabited nests contained young. At this time also some of the young birds had left the nests.

Now that the parental duties were largely over and the young required less attention, the adult birds seemed to wander farther from the nesting sites and it was not an uncommon thing to see small flocks, perhaps accompanied by the young, flying over the lake in search of insects. Seldom were the birds seen on the lake earlier in the season when apparently the bulk of their food was secured by skimming over the fields adjacent to the nesting sites.

Unfortunately, it was necessary to terminate our activities at the Laboratory on July 15, so that observations on flocking and other characteristic actions immediately preceding the autumnal migration are lacking. A continuance of this work over several seasons is much to be desired and such effort should prove well worth while.

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SUGGESTED ORNITHOLOGICAL WORK FOR BIRD
BANDERS.

BY ALFRED O. GROSS.

It is now recognized that the work of bird banding has contributed much which is important and interesting to our knowledge of ornithology. The most striking, if not one of the most valuable features of this new movement, is the large number of persons in all parts of the country who have been stimulated to taking an active interest in the study of birds and in their protection. But no matter how enthusiastic a bird bander may be he cannot make the most of his opportunity unless he has some knowledge of the fundamental facts concerning birds. In order to meet this apparent need and to assist beginners in maintaining a permanent interest in birds, especially in the work of bird banding, the North-eastern Bird Banding Association arranged with Dr. Glover M. Allen, of the Museum of Comparative Zoology, Cambridge, to give a series of ten lectures.¹ These lectures were scientific, yet not too technical for the average person unequipped with a biological training. The success of these lectures has been a source of great satisfaction to the members of the committee who developed and fostered the plan.

The interesting facts presented in these lectures are of the utmost importance to the bird bander who would really appreciate the bird in nature, and especially if he desires to contribute to the science of ornithology. Not all of us have the inclination nor the time to devote to a continuous, intensive study of birds, but I am sure there are many members of the bird banding associations who will be willing, if not eager, to assist, if certain problems concerning birds are pointed out to them. If the members of the association cooperate and concentrate their efforts on specific problems in addition to merely placing the bands on the birds, we will be able to accomplish results which are worth while. Noth-

¹ This article embodies a considerable part of a lecture, delivered in Boston, March 8, 1924, to those interested in bird banding at the close of Dr. Allen's series of ten lectures here referred to and under the same auspices.

ing will insure a continued individual interest in bird banding and ornithology in general more than the satisfaction that the worker is actually contributing to the sum total of our knowledge of birds.

Much of the ornithology of the past has been problems which have been attacked principally by the comparative study of large series of skins such as we have in more important institutions and museums. This work has been chiefly the study of the dead rather than of the living bird. I do not wish to be understood that this work is not of the greatest importance and absolutely essential for the development of scientific ornithology. But this work, as necessary as it is, has been limited to a comparatively few specialists and most of us have been able to contribute nothing. Any one of us, however, can assist materially in the tremendously big study of the bird as a living organism and the part it plays in the economy of nature. This kind of investigation has become so important that it is given the special name ecology. Haeckel, as early as 1869, defined ecology as comprising the relations of the animal to its organic environment; particularly to those animals or plants with which it comes into direct contact. Whether with the ecologist we regard the organism in relation to the world or with the physiologist as a wonderful complex of vital energies these two branches of study have this in common, that they do not confine their attention to a series of stuffed animals and anatomical dissections but to life itself.

Ecology in its broadest sense, as we consider it today, is concerned with fundamental biological problems which include all of the responses of an organism to its complete environment.

We may, according to Dr. Charles C. Adams,¹ study ecology from the standpoint of the individual, or the group of individuals, considering the interrelations of all of the organisms found in the environment. In the case of the individual, our study will be limited to a single habitat or locality, but it may be extended throughout the entire geographic range of the animal. Most of the experimental and physiological work as well as studies of life history have been made from this point of view.

Instead of using the individual as the center of the microcosm, you may investigate the ecological development and responses

¹ *Guide to the Study of Animal Ecology.*

of animals based on taxonomic units such as genera, families, orders, etc. Any such group is made the basis for study. For example, you may consider the races of Song Sparrows, or Horned Larks, in connection with their size and color correlated with climate, humidity, light, and all other factors of the environment; or our study might include all of the members of the family Fringillidae; or it may be comprehensive enough to include all birds. From this standpoint or approach, the activities and responses of the group are traced throughout all environments and associations within the area studied and responses and adjustments to the whole environment receive primary attention. Many of the contributions to ecology by the taxonomist are made from this standpoint.

The third method is to devote your attention to all the organisms in a given association. The interaction among the members of such an association might be compared to the different cells and organs of an individual. As the cells are the units of structure, so are the individuals the units of the environment. In such a study you would not confine your attention to an individual or even a large group of individuals but to all the existing birds as well as all other organisms concerned with the environment. This is the standpoint taken by the general ecologist.

These three methods of approach are not always distinct but one may frequently overlap or converge with the other; yet in our field work there is an advantage of each point of view in aiding the analysis and synthesis of any problem.

Most of us have developed an interest in ornithology by casual observations of birds followed perhaps by a desire to know all of the species within range of our homes. If not at all times of the year at least every spring we obey that irresistible impulse to get out of doors to the fields and woods. We are thrilled by the arrival of our old friends from the South and we delight in their songs and activities but our chief, perhaps only, contribution is a long list of birds we have seen and identified. These lists, especially if they are supplemented with notes, have a great value, but is it not possible for us to make a greater contribution to ornithology if we make an intensive study confining our attention preferably to an intensive study of a single species or at most to a few problems in ecology.

An eminent ornithologist once remarked that the bird student is handicapped because unlike the botanist and entomologist he can not handle and examine the living individual. This statement was made before the days of bird banding. Our new method of bird study has made possible the solution of many problems and best of all problems to which many of us may aid in solving.

When a bird is banded and properly recorded you have initiated a work which may be destined to have an important bearing on the solution of some large and general problem of ornithology. But in addition to this service every operator of a bird banding station has opportunities to secure valuable information which can never be obtained from the record cards sent to Washington.

Many of these problems which are open to us are suggested by Dr. Allen's lectures, and I shall attempt to emphasize only a few of them from the standpoint of my experience in the field. For example, in lecture No. 2 the bird bander learns there is a regular sequence in plumages and moults in birds, yet in very few species have these changes been followed through on the individual living a normal life in nature. Birds kept in confinement live under such abnormal conditions that we cannot be sure that studies made of the plumages and moults of these birds truly represent the changes made in nature. Careful notes taken of any bird captured at frequent intervals throughout the year will be of value and will give us more specific information than we can secure by a study of changes represented by different specimens of a large series of skins. But on the other hand the student of the living bird will make a serious mistake if he ignores any chance to make comparisons of his ever-changing individual with the fixed conditions in preserved specimens. Furthermore, matters will be suggested in examining a series of skins which will lead you by a more direct route in the solution of field problems. Since access to museum specimens is not always possible in making comparisons of successive plumage changes in the individuals, the observer should endeavor to record a detailed description based on color determinations made with the use of some well known color standard.

It is gratifying to know that several bird banders are already interested in problems of this nature and are making observations

which are destined to be of great importance in substantiating what has been done by museum workers and of adding information concerning many details of plumage changes which cannot be clearly determined by any other method.

In a study involving color determinations, it is advisable to have Ridgway's 'Color Standards and Color Nomenclature,' as no two persons have the same conception of color as designated by name. For example, the name sepia brown suggests a certain color sensation to me which is probably very different from your impression, hence the urgent necessity of a standard. The changes in color of any individual bird are sometimes very slight and your memory of preceding colorations will be confused unless you have a museum specimen for comparison or a detailed description based on accurate color determination.

Another very important matter along this line to which some bird bander might give special attention, if he has the proper material, is the determination of the colors of the iris of the eye and the soft or fleshy parts found in certain birds. This is something which cannot be determined from the study of all the dried skins in existence, for these colors quickly disappear, some of them a few hours after the death of the bird. To illustrate how the colors of the eye may change in the developing bird we may use the following determinations made during the course of a study of Black-crowned Night Herons:

AGE OF BIRD	COLOR
1 day	Grayish Olive
2-3 days	Reed Yellow to Olive Yellow
4-5 "	Chalcedony Yellow
10 "	Barium Yellow
20-25 "	Lemon Yellow
30 "	Strontian Yellow
40 "	Deep Chrome Yellow
50 "	Pinard Yellow
1 year	Orange Chrome
2 years	Flame Scarlet
Adult	Scarlet to Scarlet Red

There are also marked changes in the color of the feet, lores and other naked parts of the Herons which are relatively constant for different individuals of the same age.

The physiology and morphology of this color change in various cases is most interesting, but this part of the work is a purely laboratory problem which would require facilities that the average bird bander does not have. The color determinations, however, with a little preliminary practice are easily made and the worker will have the satisfaction of contributing to a field in which relatively little has been done.

WEIGHTS OF BIRDS.

There are so few records of the weights of birds that Bergtold in his book on incubation complained of the lack of data in the literature on the weights of birds which he desired to use in correlating the weight of the bird with the size of the egg and the period of incubation. We know so little concerning these matters that a series of weights of birds under varying conditions would be of importance. Care must be taken, however, to record the condition of the bird, especially such matters as the fullness of the crop. In fact, a series of weighings of the same individual taken at different times is necessary in order to approach within a reasonable accuracy of the correct weight of the bird. A method of weighing birds which is practicable in the field is to place the bird in a light muslin bag which has previously been weighed and recorded. If much of this work is to be attempted, special weighing devices may be constructed. It is advisable to use the gram as the unit of weight. In fact, the metric system is by far the best and most convenient for all scientific measurements.

TEMPERATURE OF BIRDS.

In order to make an intelligent study of all the phases of incubation, a large series of determinations of temperature of birds are needed. We know that the temperatures of different species of birds vary considerably. What effect does that difference have on the relative length of time required for incubation? Such problems and many more of a more general character cannot be solved until we know more about temperatures of birds under varying physiological conditions. Some very important work, such as that by Alexander Wetmore, has been done on comparative

temperatures of high and low orders of birds but there is need of much more work of a kind any responsible bird bander can do. The temperature of birds can be taken with the ordinary clinical thermometer. The temperature of the atmosphere should be recorded at the same time and we should be careful to note any striking physiological condition of the bird and all other factors which we think might be the cause of abnormal readings.

PATHOLOGICAL CONDITIONS.

It is of course important for us to know the normal bird before we attempt to record abnormal or pathological conditions of the birds we find in our traps. Some birds will present conditions which are obviously abnormal and surely these are all worth recording. One of the most remarkable cases of this kind is the foot disease present on the feet of the Chipping Sparrows. It is quite possible that if such work is carried on intensively by some worker it would provide material of the utmost importance in conservation. Bird pathology has not received the attention that its importance deserves. We cannot successfully combat diseases of birds if we know nothing about them and certainly we are neglecting an opportunity if we make no effort to discover the existence of disease.

PARASITES.

In addition to diseases, many birds have characteristic external parasites which in themselves offer material for interesting collections and study. In the Yellow-billed Tropic Bird of the Bermudas, the author found four species of mites, one of which proved to be a new species. There is a louse peculiar to the Heath Hen of Martha's Vineyard. Should this bird become extinct the louse will probably go with it. In 1918, while working on a life history of Traill's Flycatcher in central Illinois, the young of three out of four nests met an untimely ending by mites. The nests when closely examined proved to be a living seething mass of these minute organisms which had literally sapped the life from the helpless young. Several other instances of this sort have come to my attention in the course of field work. I know of no cases where

adult birds have been killed but doubtless mites and lice prove a menace when they are present in large numbers. Many birds, especially water birds, have at least a few of these parasites and if a bird bander discovers them, representative specimens should be preserved for future determination by some specialist.

SONG.

In contrast to subjects discussed above there are other phases of bird life which may appeal more to our aesthetic senses. Any bird bander is certain to become, if he is not already, interested in the notes and songs of the birds he traps. In fact many of us have become acquainted with our first birds by being attracted to their songs. Though the song is one of the most attractive it is also one of the most difficult features of bird life to study scientifically, especially for the observer who is not born with a musical ear. It is not an easy task to analyze the details of an intricate song and most of us fail when we attempt to record the notes in a way that our reader may receive a reasonable conception of them. A few workers have been most successful in analyzing and interpreting bird songs and a few of them have devised remarkable systems of signs and symbols for recording the various tones, pitch and quality of bird notes. But unfortunately, most of these symbols thus far devised are too intricate and complicated to be of any use to anyone other than the authors of them. We need some simple means of recording. To interpret a bird's song in terms of our own words is not satisfactory. For example, the Dickcissel song, which is one of the simplest, has received as many interpretations as there have been persons to describe it. Here are just a few of these attempts:

Wilson: Tship, tship, tshe tshe tshe.

Nuttall: Tie tie-tshe tshe tshe tship.

Coues: Look! Look! see me here! see! and Chip-Chip-chee, chee, chee.

Longville: Chic chic chelac-chick-chick-chick and Chick-ticktsh-chick-chick-chick.

Butler: Clenk, clenk, clenk-clenk-clenk.

Ridgway: See, see,-Dick, Dick,-cissel, cissel.

If you are well acquainted with the song of the Dickcissel you can, if you have a vivid imagination, see the suggestion of any of

these interpretations. But if those not familiar with this bird should attempt to imitate the song by these representations I dare say the results would prove ludicrous.

Pitch, tone and quality are not represented in these series of written words. Some of our musically inclined bird banders might be able to make us a valuable contribution if they would undertake the study of the interpretations of bird songs scientifically with a view of devising a simple but adequate means of recording the notes.

Certainly the various phases of bird song, the mechanics of the vocal organs—evolution and general significance of song, and notes in courtship, intercommunication and expression afford material for a life-long study.

BANDING OF NESTING BIRDS.

Interesting as is the experience of banding and studying the visitors to our traps, the banding of nestlings and especially the study of the life of the birds centered around the nest at least to some workers eclipses all other ecological work on birds that we may do. Not only can we do here the matters suggested in the study of the transient individuals secured in our traps, but there opens up at once innumerable fascinating problems of courtship, domestic relations, associations with other birds, bird psychology and behaviour which all warrant intensive study. The possibilities of securing important information by banding the adult parent birds and young has been demonstrated by Mr. Baldwin's work with several Wren families. His results have given us a fascinating story and has stimulated the work of bird banding to a remarkable degree. Work of this kind might be repeated on any bird which is found breeding in abundance in places convenient to our homes. The bird bander should not be content with the mere capturing of the parent birds, placing bands on their legs and banding the young when they attain the proper size. Very few, even our commonest birds, have been studied intensively and continuously through an entire life cycle. Observations of nest building, measurements, weights and specific gravity of eggs at different stages of development, intervals of time between laying of individual eggs, exact time required for incubation,

time spent by young in the nest, food and method of feeding, feather development, growth as shown by daily weights and measurements, means of recognition and the relations of the birds to other animals and plants of the environment, are all clear cut determinations which any one who is really interested in this kind of work can make. Such observations if accurately made will be of great value when included with numerous records of the same sort in making generalizations concerning the life of our common birds.

There are some who will differ with me but rather than to make a supreme effort to establish a record in the number of species and individual birds banded I would prefer to spend a whole season or several seasons if necessary in the study of a single species or of a specialized problem concerning some one bird.

If the bird bander does not have the time at his disposal to attempt an intensive study of some problem he should by no means be discouraged from operating a banding station, for the banding of birds is in itself very important. But banding birds as an end, soon becomes routine and after the novelty wears away the bird bander may lose much of his interest and enthusiasm. Like all other fields of work, the more we put into it the more we are destined to get out of it. It is sincerely hoped that many, after they have studied Dr. Allen's lectures, will desire to make studies of some special problem of ecology and those that have the time and inclination to make complete life history studies of some of our common birds.

*Bowdoin College,
Brunswick, Maine.*

THE FORTY-SECOND STATED MEETING OF THE AMERICAN ORNITHOLOGISTS' UNION.

BY T. S. PALMER.

THE Forty-second Stated Meeting of the American Ornithologists' Union was held at the Carnegie Museum, Pittsburgh, Pa., November 10-13, 1924. It was the first time that the Union had met in Pittsburgh and it proved to be one of the most successful meetings thus far held. The transaction of business, discussion of scientific papers, and the enjoyment of various social features provided by the local Committee of Arrangements fully occupied five days and evenings. One of the chief attractions of the meeting was the exhibit of bird paintings depicting the best work of many of the bird artists of the present day.

Attendance.—The Fellows numbered 26 and included a single founder, Dr. A. K. Fisher, and five others who were elected at the first meeting, viz, Ruthven Deane, Dr. Jonathan Dwight, Dr. Thos. S. Roberts, John H. Sage, and W. E. Saunders. The Honorary Fellows were represented by Dr. C. E. Hellmayr of Chicago. The number of Members, 17, was smaller than usual, but the list of Associates brought the total up to about 140, slightly less than the attendance at Cambridge and Chicago, but still making the meeting one of the largest in the history of the Union.

Sixteen States and the District of Columbia were represented and also a number of the principal museums, including those at Cambridge, New York, Philadelphia, Washington, Scranton, Pittsburgh, Cleveland, Chicago, Minneapolis, Berkeley, Ottawa and Toronto. Among the members who came from a distance were Dr. Joseph Grinnell of Berkeley, Calif.; Prof. T. C. Stephens and Mns. H. J. Taylor of Sioux City, Iowa; Dr. A. H. Cordier of Kansas City, Mo.; Dr. T. G. Ahrens of Berlin, Germany; and J. H. Fleming, W. E. Saunders, P. A. Taverner, Hoyes Lloyd, Harrison F. Lewis and L. L. Snyder from Canada.

Business Meetings.—Monday, as usual, was devoted to routine business which occupied two sessions of the Council beginning at 10 A. M. and 2 P. M., a meeting of the Fellows at 7:30 P. M. and

a meeting of the Fellows and Members at 8 P. M. The Council Meetings were held in the Laboratory of Education in the Carnegie Museum and the evening meetings at the Fort Pitt Hotel, corner of Penn Avenue and Tenth Streets, the headquarters of the Union. At the meeting of the Fellows the deed of gift of the Brewster Memorial was amended so as to permit the award of the medal to the author of the most meritorious work on American birds which has appeared during the six (instead of two) years, prior to the date of the award.

At the evening meeting 25 Fellows and 13 Members were present. Following the roll call and reading and approval of the minutes of the previous meeting, the report of the Secretary was presented showing a total membership of about 1640 and bequests and gifts amounting to \$3000. (For details see pp. —) The report of the Treasurer showed the finances of the Union in a satisfactory condition. The President reported on behalf of the Investment Trustees that the invested funds of the Union now amount to \$22,916.90. The election of officers resulted in the re-election of the officers for 1924: President, Jonathan Dwight, Vice-presidents, Joseph Grinnell and Alexander Wetmore, Secretary, T. S. Palmer, Treasurer, W. L. McAtee, Members of the Council, A. C. Bent, Ruthven Deane, J. H. Fleming, H. C. Oberholser, W. H. Osgood, C. W. Richmond and T. S. Roberts. On recommendation of the Council two Corresponding Fellows and about 290 Associates were elected. Two Members selected from the entire list of Associates were also elected, Mrs. Walter Wehle Naumburg of New York (Life Member) and Herbert Lee Stoddard of Beachton, Georgia.

As a result of the elections there are now no vacancies in the class of Fellows, only two in that of Honorary Fellows, nine in that of Corresponding Fellows, and two in that of Members.

The Committee on Biography and Bibliography, through its chairman, Dr. Palmer, presented a brief report of progress. Work on the 'Ten Year Index of The Auk' has progressed slowly and the material is now nearly ready for copying for the press. The Committee has given some attention to securing information regarding collections of birds in some of the larger museums and as a result of such efforts was able to present at this meeting two

special papers, on the collections of the Berlin Museum and of the Museo Nacional of Buenos Aires.

The Committee on Bird Protection, through its Chairman, Dr. A. A. Allen, made a report of progress and presented three resolutions which after some discussion and modification were duly adopted. These resolutions favored the complete protection of species on the verge of extinction, deplored the offering of bounties for control of so-called destructive species and favored greater protection for the Bobolink.

Resolutions were adopted expressing the thanks of the Union to the Director and Trustees of the Carnegie Museum, Mr. John M. Phillips, Mr. Dwight Winter, the H. J. Heinz Co. and the Carnegie Steel Co. for various courtesies extended to the Members.

Public Meetings.—The meetings devoted to the presentation of scientific papers occupied three days, November 11, 12 and 13, from 9 A. M. to 5 P. M., with an hour and a half for luncheon which was served each day in the cafeteria in the basement of the Museum. The regular sessions were held in the Lecture Hall of the Museum and the technical sessions in the Laboratory of Education on the third floor. Owing to the length of the program, which was a third longer than any heretofore attempted, it was necessary to extend the hours of meeting by beginning at 9 A. M., except on Tuesday, by holding simultaneous sessions on Wednesday and Thursday mornings, and to limit most of the papers to 30 minutes or less. Thus ample time was allowed for discussion at the morning sessions, although nearly 60 papers were presented.

The sessions on Tuesday were devoted to papers of general interest and opened with an address of welcome by Dr. Douglas Stewart, Director of the Museum. Response on behalf of the Union was made by Dr. Frank M. Chapman. The papers included an address by Dr. A. K. Fisher 'In Memoriam, Walter Bradford Barrows'; Forbush's discussion of whether migration is affected by weather conditions and Norman McClintock's 'Robin Study' based on a series of observations extending over ten years and revised to make a single connected picture of the habits of the bird. Two notable contributions comprised histories of the bird collection of the Museo Nacional by Dr. Roberto Dabbene and that of the Berlin Museum by Dr. T. G. Ahrens based on data furnished by Dr. Erwin Streseman.

As a whole the papers on the program covered a wide variety of subjects, easily grouped under a few main headings. Reports of recent expeditions were naturally of chief interest and included Dr. Murphy's 'Report of the Whitney South Sea Expedition'; Dr. Rea's statement of the progress of the Cleveland Museum South Atlantic Expedition; Brandt's account of his recent trip to Alaska, illustrated by unusually fine pictures and a description of the finding of nests and eggs of several rare shorebirds; Griscom's 'Bird Hunting in Unexplored Panama'; and Chapman's 'Ornithological Reconnaissance in southern Chile.'

The papers presented at the technical session on Wednesday morning were devoted mainly to the discussion of the status and relationships of certain species and genera of birds, including *Henricorhina*, *Palaeospiza*, *Larus kumlieni*, *Cyclarhis*, *Zonotrichia*, *Bubalornis*, *Dinemellia* and *Compsothlypis*. There were also communications on the Eastern Song Sparrows, notices of 'New Birds from Costa Rico,' and a discussion of the 'Color Relationships in Plumage.'

At the same time a bird banding session was considering various topics, including Lyon's description of his method of trapping tree-creeping birds; Grinnell's 'Bird Netting as a Method in Ornithology'; Ahrens' 'Report on The Bird Observation Station on Heligoland' in the North Sea where the method of marking birds by painting their plumage has been used on a larger scale than elsewhere; and Lincoln's 'Results of Bird Banding in Europe,' illustrated by several well-known species. Mrs. F. W. Commons' 'Report of the Tanager Hill Station' at Minneapolis reviewed the work of one of the most active stations of the Inland Bird Banding Association and one which has not only shown remarkable growth during the past year but has contributed valuable data on the bird waves observed during the autumn migration. Fletcher's comprehensive report on the activities of the Northeastern Bird Banding Association suggested special problems for investigation and summarized the results of banding Night Herons in Massachusetts based on several thousand reports. One of these Herons was taken as far south as Jamaica.

At the session on life histories Dr. Stone read extracts from his charming biographies of birds observed at Cape May, N. J.,

including pen pictures of the action of shorebirds on their feeding grounds and the habits of the Laughing Gull. Other contributors at this session described the 'Nesting of the Black Tern,' an 'Intimate Study of Quail Life,' 'Birds of a Brooklyn Swamp,' the life history of the Bank Swallow, the 'Daily Life of the American Eagle,' and Dr. Heinroth's methods of securing data for his studies of European birds.

Simultaneously with the life history papers were presented those on geographic distribution which were devoted to a discussion of the 'Birds of Cobb's Island, Va.,' the birds of the Rocky Mountain National Park, 'Our Migrant Shorebirds in South America,' 'The Interrelations of the Campo and Amazonian Faunas,' 'The Breeding Seasons of Birds in Tropical Africa,' and 'The Faunal Regions of the Western Hemisphere.'

Various phases of bird protection were presented in Pearson's review of 'Some Recent Efforts for Bird Protection,' Townsend's 'Conservation of the Herring Gull,' Shoffner's report on the investigation of the Common Crow conducted by the 'Farm Journal,' Packard's statement of 'The Bobolink Question,' Allen's 'Search for Vanishing Birds' and Jones' recent 'Revisit to Carroll Island in the Olympic Bird Reservation in Washington.'

The program also included a notable series of motion pictures, comprising a dozen or more films representing some of the best recent work in America. Of special interest in this series were Weiseman's pictures showing how birds may be tamed and brought close to the camera, Roberts' pictures of the Burrowing Owl in Minnesota, and a recent film of Canadian Sea-Fowl taken on the north shore of the Gulf of St. Lawrence and exhibited by the courtesy of the Canadian National Parks Service.

Exhibition of Bird Paintings.—The chief feature of the meeting was the loan exhibit of bird paintings under the direction of George Miksch Sutton, exhibited through the courtesy of the Director, in the Department of Fine Arts of the Carnegie Institute. This collection was larger than either of those at the Washington or Chicago meetings and was displayed in a special gallery under ideal conditions. The paintings were all under glass, were hung under the supervision of the Art Department, and remained on exhibition three weeks. The arrangement, instead of being made

according to subject or author, was designed to produce the best artistic effect and the result was highly satisfactory. For the first time a printed catalogue of the exhibit was available and this catalogue showed the names of the following artists:

W. J. Belcher	Edward von S. Dingle	Edwin Richard Kalm-
Frank Weston Benson	Mary E. Eaton	bach
Frank Bond	Ottmar Fuehrer	Karl Plath
Wolfrid Rudyerd Boul-	Louis Agassiz Fuertes	Earl Lincoln Poole
ton, Jr.	Carl F. Gronemann	Conrad K. Roland
Courtenay Brandreth	Charles E. Heil	Edgar Roth
Paul Branson	Frank C. Hennessey	Edmund Joseph Sawyer
Rex I. Brasher	Henry Hintermeister	Robert J. Sim
Allan Cyril Brooks	Robert Bruce Horsfall	George Miksch Sutton
Charles Livingston Bull	Lynn Bogue Hunt	Henry Emerson Tuttle
Harry C. Denslow	Francis Lee Jaques	William Wells

The total number of contributors was 31 and the total number of pictures about 140. Although each artist was limited to six paintings, several contributed only one or two each, and the Hennessey pictures unfortunately were not released from customs custody in time for exhibition.

Other Events.—The social gatherings, included a conversazione and lecture at the Museum on Tuesday evening, the annual dinner at the Fort Pitt Hotel on Wednesday evening, the dinner of the Eastern Bird Banding Association at the Faculty Club on Thursday evening, and three excursions on Friday. On Tuesday evening an opportunity was afforded the members to inspect the exhibit of bird pictures and the study collection of birds of the Carnegie Museum. This collection of about 90,000 specimens, representing some 6,000 species, is well arranged and readily accessible, and the quality of the skins is far above the average. It is particularly rich in series of certain North American birds and contains important collections from northern South America and the valuable Buller collection of New Zealand birds. After examination of the paintings and specimens, the members were entertained by Norman McClintock, who gave an account, illustrated with excellent motion pictures, of his trip to the Upper Yellowstone region in Wyoming to secure films illustrating the life history of the Rocky Mountain Moose. At the annual dinner, attended by 130 Members and guests, Dr. Witmer Stone presided and brief talks were given by

several of the Members, the keynote of the evening being the young ornithologist and his opportunities for ornithological work.

At the dinner on Thursday, attended by about 25 Members and friends of the Eastern Bird Banding Association, addresses were made by the president, the secretary, and several of the guests, who presented various phases of recent bird banding work.

The outings on Friday were arranged to show some of the leading industries of Pittsburgh and the local points of interest. In the morning a trip was made to the establishment of the H. J. Heinz Company and the members were shown the methods used in the preparation of various food products. In the evening a party of twenty-four under the guidance of Messrs. John M. Phillips and J. M. Lazear went by automobile to the plant of the Carnegie Steel Company at Duquesne, where they were shown the process of manufacturing steel and rolling steel rails. In the afternoon a trip was made to inspect the collections of birds in two local aviaries, both of which contained a number of rare species. The private collection of Mr. Dwight Winter contained among other interesting birds an unusually fine example of a very rare Fijian Parrot (*Pyrrhulopsis taviunensis*). This bird is probably the only living specimen in the United States at present and belongs to a species which is represented by comparatively few specimens even in our largest museums.

Results.—Among the results of the Pittsburgh meeting were the modification of the conditions governing the award of the Brewster Medal, provision for continuing work on the 'Ten Year Index of The Auk' and for cooperating with the Zoological Society of London in the publication of the 'Zoological Record' for 1923, and reorganization of the Committee on Nomenclature with a view to speeding up preparation of the new Check List of North American Birds. The various ways in which bird banding may be made to contribute more effectively to bird study were demonstrated, and the progress in bird illustration was clearly brought out by the exhibition of bird paintings and by the series of motion picture films.

Invitations to hold the next annual meeting were received from a number of organizations, including one from the Cooper Ornithological Club to meet in Los Angeles and one from the American

Museum of Natural History to meet in New York. It was finally voted to accept the invitation of the American Museum of Natural History and the Forty-third Annual Meeting will be held in New York City, November 9-12, 1925.

PROGRAM.

(Papers are arranged in the order in which they were presented at the meeting. Those marked with an asterisk (*) were illustrated by lantern slides.)

TUESDAY MORNING.

Address of Welcome. DR. DOUGLAS STEWART, Director Carnegie Museum. Response on behalf of the Union. DR. FRANK M. CHAPMAN, New York City.

Roll Call of Fellows and Members, Report of Business Meeting, Announcement of Result of Elections.

1. Progress of the Whitney South Sea Expedition. ROBERT CUSHMAN MURPHY, New York City. (15 min.)
2. In Memoriam: Walter Bradford Barrows. A. K. FISHER, Washington, D. C. (30 min.)
3. Egging and the Conservation of the Herring Gull. CHARLES W. TOWNSEND, Ipswich, Mass. (15 min.)
4. The Ornithological Collection of the Museo Nacional, Buenos Aires. ROBERTO DABBENE, Buenos Aires, Argentina (presented by the Secretary). (15 min.)
5. Is Migration affected by Weather Conditions? EDWARD H. FORBUSH, Boston, Mass. (20 min.)
6. The Status of the Crow. CHAS. P. SHOFFNER, Philadelphia, Pa. (20 min.)

TUESDAY AFTERNOON.

7. *Experiences with Birds. T. WALTER WEISEMAN, Pittsburgh, Pa. (20 min.)
8. The Bird Collection in the Berlin Museum. T. G. AHRENS, Berlin. (15 min.)
9. *Some Recent Efforts for Bird Protection. T. GILBERT PEARSON, New York City. (30 min.)
10. *The Birds of Gaspé County, Quebec. JOHN B. DE MILLE, New York City. (40 min.)
11. *Glimpses of Alaskan Bird Life. HERBERT W. BRANDT, Cleveland, Ohio. (40 min.)
12. *The Status of the Ruffed Grouse in Southeastern New York. ALFRED O. GROSS, Brunswick, Me. (25 min.)

WEDNESDAY MORNING—BIRD BANDING SESSION.

13. Bird Netting as a Method in Ornithology. JOSEPH GRINNELL, Berkeley, Calif. (20 min.)
14. *Some Results of Bird Banding. WILLIAM I. LYON, Waukegan, Ill. (20 min.)
15. *The Bird Observation Station on Heligoland. T. G. AHRENS, Berlin. (10 min.)
16. *Results of Bird Banding in Europe. FREDERICK C. LINCOLN, Washington, D. C. (25 min.)
17. *Report of the Tanager Hill Bird Banding Station, Minn. MRS. FRANK W. COMMONS, Minneapolis, Minn. (Presented by THOS. S. ROBERTS.) (20 min.)
18. *Activities of the Northeastern Bird Banding Association. LAURENCE B. FLETCHER, Brookline, Mass. (40 min.)
19. *A Revisit to Carroll Island, Washington, in the Olympic Bird Reservation. LYNDY JONES, Oberlin, Ohio. (15 min.)
20. The Bobolink Question. WINTHROP PACKARD, Boston, Mass. (15 min.)

WEDNESDAY MORNING—TECHNICAL SESSION.

21. Mutation in *Henicorhina*. Illustrated by maps. FRANK M. CHAPMAN, New York City. (15 min.)
22. Some Color Relationships in Bird Plumage. WITMER STONE, Philadelphia, Pa. (10 min.)
23. *Systematic Position of the Fossil *Palaeospiza bella*. ALEX. WETMORE, Washington, D. C. (10 min.)
24. The Status of Kumlien's Gull (*Larus kumlieni*). JONATHAN DWIGHT, New York City. (10 min.)
25. Geographic Variation in the Eastern Song Sparrow. W. E. CLYDE TODD, Pittsburgh, Pa. (10 min.)
26. A Few Remarks on *Cyclarhis*. Illustrated by diagrams. MRS. WALTER W. NAUMBURG, New York City. (20 min.)
27. Distribution and Relationships of the Genus *Zonotrichia*. RUDYERD BOULTON, New York City. (20 min.)
28. Descriptions of New Birds from Costa Rica. JONATHAN DWIGHT and LUDLOW GRISCOM. (5 min.)
29. The Systematic Position of *Bubalornis* and *Dinemellia*. JAMES P. CHAPIN, New York City. (10 min.)
30. Relationships and Distribution of the Warblers of the genus *Compsothlypis*. Illustrated by maps. FRANK M. CHAPMAN, New York City. (15 min.)

WEDNESDAY AFTERNOON.

31. Progress of the Cleveland Museum South Atlantic Expedition. P. M. REA, Cleveland, Ohio. (5 min.)

32. *A Search for Vanishing Birds. ARTHUR A. ALLEN, Ithaca, N. Y. (45 min.)
33. *An Ornithological Reconnaissance in Southern Chile. FRANK M. CHAPMAN, New York City. (45 min.)
34. A Robin Study and the Spring Dance of the Heath Hen. NORMAN MCCLINTOCK, Pittsburgh, Pa. (30 min.)

THURSDAY MORNING—LIFE HISTORY SESSION.

35. *Observations on the Nesting of the Black Tern. MILES D. PIRNIE, Ithaca, N. Y. (20 min.)
36. *An Intimate Study of Quail Life. MRS. H. M. LITTLE, Library, Pa. (20 min.)
37. *Life Studies of European Birds. T. G. AHRENS, Berlin. (40 min.)
38. Some Cape May Bird Biographies. WITMER STONE, Philadelphia, Pa. (30 min.)
39. Some Birds of a Brooklyn, N. Y., Swamp. GEORGE E. HIX, Brooklyn, N. Y. (15 min.)
40. Bird-hunting in Unexplored Panama. LUDLOW GRISCOM, New York City. (30 min.)
41. Bank Swallows—A Bit of Life History. MISS MAY T. COOKE. (Presented by FREDERICK C. LINCOLN.) (10 min.)
42. *Daily Life of the American Eagle—Early Phase. FRANCIS H. HERICK, Cleveland, Ohio. (20 min.)

THURSDAY MORNING—GEOGRAPHIC DISTRIBUTION SESSION.

43. *The Recent Status of the Bird Life of Cobb's Island, Va. RUDYERD BOULTON, New York City. (20 min.)
44. *A Few Notes on Rocky Mountain Birds. MRS. CHARLES B. GRAVES, New London, Conn. (20 min.)
45. *Our Migrant Shore Birds in Southern South America. ALEX. WETMORE, Washington, D. C. (20 min.)
46. *Breeding Seasons of Birds in Tropical Africa. JAMES P. CHAPIN, New York City. (20 min.)
47. The Designation of Birds' Ranges. JOSEPH GRINNELL, Berkeley, Calif. (15 min.)
48. The Interrelation of the Campo and Amazonian Faunas. Illustrated by maps. MRS. WALTER W. NAUMBURG, New York City. (20 min.)
49. The Faunal Regions of the Western Hemisphere. W. DE W. MILLER, New York City. (25 min.)
50. Some Problems of Geographic Distribution in Western Panama. Illustrated by maps and specimens. LUDLOW GRISCOM, New York City. (15 min.)
51. Avian Gonads and Migration. W. H. BERGTOLD, Denver, Colo. (Read by title.)

52. Naming Shore Bird Tracks. JOHN T. NICHOLS, New York City.
(Read by title.)

THURSDAY AFTERNOON—MOTION PICTURES.

53. Bird Photography with an Amateur Motion-Picture Camera. A. H. CORDIER, Kansas City, Mo. (30 min.)
54. Friendliness of Birds. T. WALTER WEISEMAN, Pittsburgh, Pa. (30 min.)
55. Motion Pictures of Some West Virginia Birds. I. H. JOHNSTON, Charleston, W. Va. (30 min.)
56. Canadian Sea-Fowl. (Film exhibited by the courtesy of the Canadian National Parks.) HARRISON F. LEWIS, Ottawa, Canada. (45 min.)
57. Bird Studies in Motion Pictures. THOS. S. ROBERTS, Minneapolis, Minn. (30 min.)
58. Bird Life in Texas and Florida. ARTHUR A. ALLEN, Ithaca, N. Y. (15 min.)

FELLOWS AND MEMBERS PRESENT.

FELLOWS.—A. A. Allen, J. P. Chapin, F. M. Chapman, Ruthven Deane, Jonathan Dwight, A. K. Fisher, J. H. Fleming, E. H. Forbush, L. A. Fuertes, Joseph Grinnell, Lynds Jones, W. L. McAtee, W. De W. Miller, R. C. Murphy, H. C. Oberholser, T. S. Palmer, C. W. Richmond, J. H. Riley, T. S. Roberts, John H. Sage, W. E. Saunders, Witmer Stone, P. A. Taverner, W. E. C. Todd, C. W. Townsend, Alexander Wetmore—Total 26.

HONORARY FELLOW.—C. E. Hellmayr.

MEMBERS.—Wm. L. Baily, Geo. L. Fordyce, Ludlow Griscom, Alfred O. Gross, F. H. Herrick, A. H. Howell, J. W. Jacobs, F. H. Kennard, F. C. Lincoln, Mrs. W. W. Naumburg, J. T. Nichols, T. Gilbert Pearson, J. L. Peters, S. N. Rhoads, C. H. Rogers, T. C. Stephens, B. H. Swales—Total 17.

ELECTION OF CORRESPONDING FELLOWS, MEMBERS AND ASSOCIATES.

CORRESPONDING FELLOWS.—2.

Prince N. Taka Tsukasa, President of the Ornithological Society of Japan, Tokyo, Japan.

Tokutaro Momiyama, Imperial University, Tokyo, Japan.

MEMBERS.—2.

Mrs. Walter Wehle Naumburg, Hotel St. Regis, New York City (Life Member.)

Herbert Lee Stoddard, Beachton, Ga.

ASSOCIATES.—321.

The names of the Associates who qualify will appear in the annual Directory of Members in 'The Auk' for April.

REPORT OF THE SECRETARY.

BY T. S. PALMER.

Membership.—During the past spring the membership list of the Union has undergone a drastic revision and in consequence the total number of members is not as large as would be the case under ordinary circumstances. The Union has members in every State and Territory and in the Philippine Islands, and also in a number of foreign countries and colonies in North America, the West Indies, South America, Europe, Asia, Africa and Australia. Following is a tabular statement showing the figures for the present membership in comparison with those for last year and ten years ago.

Year	Fellows	Retired Fellows	Honorary Fellows	Corre- sponding Fellows	Members	Associates	Total
1914	50	4	14	57	74	902	1101
1923	49	5	23	87	95	1393	1652
1924	50	5	23	89	96	1374	1637

The gain during the year included the election at the last annual meeting of 12 Corresponding Fellows and 172 Associates. This apparent increase of 184 was offset by losses of 21 by death, 25 by resignation, 27 by failure to qualify, and a considerable number by delinquency.

In revising the list published in 'The Auk,' for April 1924, 176 names were dropped including those due to death, resignation or delinquency. The deaths included those of 1 Honorary Fellow, 6 Corresponding Fellows, 1 Member and 13 Associates.

Activities of Members Abroad.—During the year 1924, a number of our members visited foreign countries or engaged in field work abroad. The South Pacific, Tropical America and Africa have been the scenes of labor of several collecting expeditions. The American Museum has continued its explorations in the South Pacific where Mr. R. H. Beck has been collecting recently, with Suva, Fiji, as a base of operations.

The expedition of the Cleveland Museum in charge of Mr. Geo. F. Simmons after a somewhat protracted and stormy voyage

across the Atlantic, collected on the Cape Verde Islands and has recently been working on the adjacent coast of West Africa.

Dr. Frank M. Chapman and Mr. Frederick C. Walcott made an extended trip to southern South America, visiting a number of points in Chile, Bolivia, and Argentina.

In tropical America, Dr. Paul Bartsch has again visited San Domingo, Mr. Henry Malleis returned last spring from explorations in search of the Ocellated Turkey and other game birds for introduction in Florida and has again gone to Honduras where he is continuing his work. Mr. Ludlow Griscom has worked in some of the lesser known regions of Panama and Dr. T. Gilbert Pearson visited both Panama and the Canal Zone in the interest of bird protection.

Mr. George Stuart, 3d and Dr. Casey Wood have visited England and the latter is now preparing for an extended tour to Ceylon, while Dr. Spencer Trotter spent some time in Iceland and Scotland.

Africa has been the scene of activity of several members. Dr. John C. Phillips has recently returned from an extended trip to British East Africa, Uganda, and other points in the interior of Africa. Mr. Alfred M. Collins spent some time in the latter region and secured two fine gorillas. Dr. Herbert Friedmann, after making investigations on Cowbirds in southern Texas, has arranged for a broader extension of his studies on parasitism in South Africa.

In the Orient, Dr. Hugh M. Smith has been engaged in making a preliminary fisheries reconnaissance for the Siamese Government. He returned for a brief visit last summer, bringing with him a small collection of birds and has now resumed his fisheries work in Siam. In China, Mr. N. Gist Gee is still at Peking and Dr. R. P. Metcalfe is at Nanking.

Bequests and Contributions.—The by-laws impose on the Secretary the pleasant duty of acknowledging the contributions received by the Union, which during the year 1924 have been notable. The bequest of \$2000 under the will of William Brewster payable after the death of Mrs. Brewster was received in May and deposited with other permanent funds in the custody of the Investment Trustees. This is the largest bequest that the Union has thus far received and it is hoped it may be only a forerunner of others

which will express in permanent form the active interest of the donors in the study and preservation of birds. During the year a gift of \$1000 was received from a friend of the Union who insisted that his identity should not be revealed. One half of this generous gift is to be placed in the publication fund and the other half is intended for a 'Students Fund' the income of which is to be used primarily under direction of the Council in meeting the dues of students working their way through College who find it impossible to keep up their membership. In the past the Union has lost a number of young and enthusiastic students who felt unable to carry the dues in addition to their college expenses and this fund will make it possible to retain such members during the years when they are likely to receive the greatest benefit from their association with the Union.

The Journal.—A revised list of complete sets of 'The Auk' was published in the January number. This list showed a total of 203 of which 87 were in public libraries or museums. Since the publication of the list renewed interest has been manifested in completing sets especially for college and museum libraries. As a result 19 additions have been made bringing the number of library sets up to 97 and the total to 222. In addition several other sets have been completed to a point where only half a dozen volumes or less are now lacking and some of these may be secured in the near future. It may be recalled that when this investigation was begun five years ago, only about 150 complete sets were known. Since then the increase has been nearly 50 per cent.

The Union has now reached a point where it no longer has any complete sets of 'The Auk' for sale, and it is doubtful if more than one or two additional sets can be completed from the stock on hand owing to the exhaustion of several of the early numbers. Under these circumstances it seems less important to maintain the stock of duplicates in the hope of making up complete sets than to place them whenever possible in college libraries, where they will be bound and permanently preserved.

Museum collections.—Last year attention was called to the fact that the number of genera unrepresented in any American museum was approximately 130. Notable additions to the collections in Cambridge, New York and Washington have now made a sub-

stantial reduction in the number. During the coming year it is hoped to publish an annotated list of the genera which are not contained in any of the museums of this country.

Papers of the Cambridge Meeting.—Rather more than the usual number of papers presented at the last annual meeting ('Auk,' XLI, pp. 131-133), have been published this year in 'The Auk.' These include No. 2, Palmer's 'Looking Backward,' No. 3, Townsend's 'Mimicry of Voice in Birds,' No. 11, Herrick's, 'Eagle Observatory,' No. 20, Mrs. Naumburg's 'Remarks in *Thraupis sayaca*,' No. 23, Chapman's 'Criteria for Determination of Sub-species,' No. 32, Brandt's 'Nesting of the Short-tailed Hawk in Florida,' No. 39, Bergtold's 'Colorado Anatidae,' and No. 41, 'Kirtland's Warbler in Its Summer Home.'

DECEASED MEMBERS, 1923-1924

COUNT ADELARDO TOMMASO SALVADORI PALEOTTI,¹ Honorary Fellow, died in his 89th year at Turin, Italy, Oct. 9, 1923.

MONTAGUE CHAMBERLAIN,² Founder and Corresponding Fellow, died in his 80th year at Boston, Mass., Feb. 10, 1924.

CHARLES CHUBB,³ Corresponding Fellow, died in his 73d year at London, England, June 25, 1924.

HENRY HAVERSHAM GODWIN-AUSTIN,⁴ Corresponding Fellow, died in his 90th year at Godalming, Surrey, England, Dec. 2, 1923.

WILLIAM HENRY DUDLEY LE SOUFF,⁵ Corresponding Fellow, died in his 67th year at Melbourne, Australia, Sept. 6, 1923.

WILLIAM ROBERT OGILVIE-GRANT,⁶ Corresponding Fellow, aged 61, died at Farley Cottage, near Reading, England, July 26, 1924.

VICTOR RITTER VON TSCHUDI ZU SCHMIDHOFFEN, Corresponding Fellow, aged 76, died at Villa Tannenhof, Salzburg, Austria, Mar. 5, 1924.

HERLUF WINGE,⁷ Corresponding Fellow, aged 66, died at Copenhagen, Denmark, Nov. 10, 1923.

DEAN CONANT WORCESTER,⁸ Corresponding Fellow, died in his 58th year at Manila, P. I., May 2, 1924.

NED HOLLISTER, Member, aged 48, died at Washington, D. C., Nov. 3, 1924.

¹ For obituary notice see 'Auk,' XLI, pp. 384-385.

² " " " " " " pp. 643-644.

³ " " " " " " pp. 646-647.

⁴ " " " " " " pp. 512-513.

⁵ " " " " " " pp. 385-386.

⁶ " " " " " " pp. 644-645.

⁷ " " " " " " XLII, pp.

⁸ " " " " " " XLI, pp. 645-646.

MRS. CHARLES E. RAYMOND, Associate, of Hinsdale, Ill., died Feb. 5, 1924.
CLARENCE SACKETT, Associate of Rye, N. Y., died May 1923.

⁷ Vög. Pal. Faun. **3**, 1921, p. 1818.

"Er ist aschgrau, obenher am Kopf roth, und hat schwarze Ruderfedern. Das Vaterland ist Mexico. Boddaert." Not a word as to size, the only distinction between the Little Brown and Sandhill Cranes, neither does, "Mexico" offer a solution, since both forms occur, at least in migration, in the area occupied by Mexico in 1776. The reference to Boddaert I have not been able to trace, it may possibly be based on an unpublished manuscript. We may now discard Müller's name as unidentifiable, and endeavor to find an available name in synonymy. The earliest binomial author to characterize the Sandhill Crane was F. A. A. Meyer, reviewing Zimmermann's edition of Bartram's Travels (Berlin 1793), preserving the name bestowed upon the bird by Bartram. The form must now be known as

***Megalornis canadensis pratensis* (Meyer)¹**

Since it is always desirable to have as definite a type locality as possible, I designate Clay County, Florida as such. Bartram² gives a delightful account of his journey across the eastern part of the Alachua Savanna, which, as nearly as can be determined is the part lying within the present borders of Clay County. He describes in detail a "Savanna Crane" that the hunters in his party shot there, adding "We had this fowl dressed for supper and it made excellent soup." Thus it appears that no type specimen was ever preserved.

For this reason I feel that the selection of a neotype in this case would be perfectly justified, except that I fail to see what useful purpose such a selection would accomplish; a topotype is every bit as satisfactory. Until zoölogists have formulated and agreed upon certain rules governing the selection of neotypes, it is to be hoped that the practice will not become general, since there is bound to be confusion if indulged in indiscriminately.

The Florida Sandhill Crane appears to be confined almost entirely to the Florida peninsula, though it is probable that the few pairs still resident in southern Baldwin County, Alabama,³ are referable to this form. I have not seen any birds from Louisiana.

The bird that formerly had a nearly continuous breeding range from British Columbia east to western Ontario, and south to northern California and Ohio has been greatly reduced in numbers by encroachment on its summer haunts until it is now extirpated over a large area of its former range. It is doubtful if the breeding

¹ *Grus pratensis* Meyer, Zoologische Annalen 1, 1794, p. 286 and 296. Florida ex Bartram.

² Travels through North and South Carolina etc. etc., Philadelphia, 1791.

³ Howell, Bds. of Ala. 1924, p. 85.

area of the bird of the northern United States ever adjoined that of the Florida bird. In any event it differs sufficiently from that form to warrant subspecific distinction and may be known as

***Megalornis canadensis tabida* subsp. nov.**

Type.—72695 Collection of the Museum of Comparative Zoölogy, adult male. Valley of the South Fork of the Humboldt River, Nevada, May 19, 1859, collected by Chas. S. McCarthy.

Characters.—Similar to *Megalornis canadensis pratensis* (Meyer) but paler throughout especially on the occiput and back of neck which are pallid mouse gray to pale mouse gray instead of light mouse gray to mouse gray; the underparts particularly the lower breast and abdomen are appreciably grayer. Measurements indicate a longer wing and bill combined with a shorter tarsus than in the Florida bird, but I am not at all sure the mensural characters can be maintained.

MEASUREMENTS:—*Megalornis canadensis pratensis*.

9 males. Wing (arc, measured with tape) 490–550; exposed culmen, 116–138; tarsus 231–254 mm.

11 females. Wing 475–525; exposed culmen 118–125 (10 specimens); tarsus 218–245 mm.

***Megalornis canadensis tabida*.**

4 males. Wing 550–590; exposed culmen, 132–140; tarsus, 231–242 mm.

The measurements of 7 males and 1 female of Californian specimens published by Maillard,¹ would, however, indicate that the average differences would tend to disappear were a large series of birds to be measured by the same investigator.

Remarks.—Of the numerous synonyms that have at one time or another been quoted in the synonymy of the Sandhill Crane, there are none that apply to the western race. *Grus cinerea longirostris*² Temm. and Schl. and *Grus schlegelii* Blyth³ are the most puzzling and were formerly believed to refer to the Sandhill Crane, but Dr. Hartert, the most recent reviewer of the Cranes now cites both these names in the synonymy of *M. c. canadensis*.

In conclusion my thanks are due to Drs. C. W. Richmond and G. M. Allen for information concerning the existence and status of the works of F. A. A. Meyer.

*Museum of Comparative Zoölogy,
Cambridge, Mass.*

¹ Condor, 23, 1921, p. 31.

² Temminck and Schlegel, Faun. Jap. 3, 1850, p. 117, pl. 72. Japan.

³ Blyth, Field, 42, 1873, p. 419, ex. Temm. and Schl. Faun. Jap. pl. 72.

GENERAL NOTES.

Sea-birds at Cape Lookout, North Carolina.—**SOOTY SHEARWATER** (*Puffinus griseus stricklandi*).—While I was on my house-boat in bight of Cape Lookout, at 2 A. M., May 26, 1924, we had a twister storm which did some damage to boats; and soon after daylight I found two Sooty Shearwaters alive on the beach, but one badly storm battered. One died eight hours later and one eighteen hours later. I observed with interest the strongest of these birds, and especially noted its peculiar cry of protest when disturbed. A little native child very aptly described this cry, when he exclaimed "sounds like a Christmas horn," meaning the blast that children blow on the little red tin horns from the Woolworth five and ten cent stores.

I also noted that when emitting these cries the bird ruffled up its feathers along anterior edges of its wings, until they stood straight out on both sides of the edge of the wing, and at the same time it also ruffled up certain feathers of its back; not on the neck or just back of it, but back near the base of the tail, meanwhile widely expanding its tail-feathers.

Very few Sooty or any other Shearwaters were present off Cape Lookout in the spring of 1924, although I saw for the first time in this field one of the equally large species having much white in its plumage.

AUDUBON'S SHEARWATER (*Puffinus herminieri*).—During the summer months this West Indian species is quite common at Cape Lookout, but rarely are more than half a dozen seen on one day. On July 25, 1924, following several days of wind, from southeast, of almost storm velocity, there appeared in the bight of Cape Lookout vast schools of small sardines, covering acres, and kept well up on the surface by great numbers of ocean mackerel (*Auxis thazard*). Hovering over and feeding on the sardines were great numbers of Gulls and other sea birds including more than a hundred Audubon's Shearwaters, many of which so gorged themselves that they were unable to fly, yet resting on the water, I noticed they continued to catch and eat the sardines.

I ran out to them in my motor launch and with small hand dip net picked up and carried on board my house-boat more than a dozen of them for study.

Separating these in four cages, I made many tests. After a short time they showed no fear and would eat from my hand. The voice of this species is especially peculiar, and quite well described by two little children who exclaimed, "Sounds just like a rubber doll baby when you squeeze it;"—I cannot describe it better. It is always the same either indicating pleasure, fear, protest or rage; the same careless, soft, whistling note even when I would force two of them to fight, with bills locked together and really hurting each other.

I gave three in one cage only fresh water to drink, and after a first trial,

I never saw them drink it again. Although these three birds were regularly fed one died at the end of five days and one on the sixth day. Suspecting that they might actually have died of thirst with fresh water to hand, I then released the remaining bird. After flying for a short distance, it alighted on the water by the side of my boat, and for half an hour appeared to be drinking sea water almost continuously, becoming so water-logged that it was unable to fly. I picked it up in my hand and threw it into the air and although it tried vigorously to fly, its weight was then too great and it fell back into the sea.

After the first two days I often fed the Shearwaters from my own hands, and noted that they were the most gluttonous birds that I have ever observed. Wishing to see just what one of them would really eat, I continued to give it little sardines, and although I kept no count, I must have given it approximately fifty. I used no force, just held the little wiggling fish in front of its bill, and it continued to take them in, until it appeared to get sleepy, and swallow with difficulty, then stopped taking them from my hand, and half an hour later I observed that the bird was dead: It would presumably have been unable to catch fish for itself at some time prior to eating itself to death.

During the stay of this large flock of Audubon's Shearwaters in the bight of Cape Lookout, there was quite a heavy on-shore wind one night, and the next morning, I counted thirty-two of these birds on the beach, about half of them either dead or dying, and in my opinion, less than a dozen recovered. It occurs quite frequently that not only this but other species of Shearwaters are blown ashore and killed. I know of no kind of bird that becomes so completely helpless from gorging itself with food, and very often they are the prey, when in this condition, of large voracious fishes. On several occasions I have found them in the stomachs of sharks, and I can recall only one instance of having found evidence of any bird other than Shearwaters having been eaten by sharks.

RED PHALAROPE (*Phalaropus fulicarius*).—The Red Phalarope is so rare at Cape Lookout, North Carolina that the occurrence of a bird of this species there, May 29, 1924, is worth recording. It was found swimming in a little pond in the marshes and was in process of acquiring summer plumage, the lower parts mottled with red and white.

Pearson, Brimley and Brimley (1919), *Birds of North Carolina*, give no record for the Red Phalarope later than April 17.—RUSSELL J. COLES, Danville, Va.

The Brown Pelican (*Pelecanus occidentalis*) in Ontario.—On September 12, 1924, a Brown Pelican was shot at Frenchman's Bay about twenty-five miles east of Toronto. The specimen, an immature female, apparently in its second year, was in good condition and is now No. 24, 9, 16, 1, in the collection of the Royal Ontario Museum of Zoölogy, Toronto.

This constitutes the first authentic record of the species for the province although it had been included in Fleming's hypothetical list in 'Birds of

Toronto.' ('The Auk,' Vol. XXIII, p. 453.)—L. L. SNYDER, *Royal Ontario Museum of Zoölogy, Toronto.*

Abundance of the Laughing Gull (*Larus atricilla*) about New York City.—During the past late summer and early fall there was an unusual abundance of the Laughing Gull in the vicinity of New York City. It was first reported in the latter part of August. On September 6, the writer counted around 50 along Brooklyn's water front. The following day about 25 were seen from the Fort Lee ferry (125th street). The largest flock was seen at the mouth of the Bronx River on September 28. On this date there were fully 1000 birds in the flock and their cries were deafening. At this writing, October 8, there are still some birds present.—GEORGE E. HIX, *Brooklyn, N. Y.*

Black Skimmer (*Rynchops nigra*) at Long Beach, N. Y.—On October 5, 1924, the writer, accompanied by Bernard Nathan, Charlton Ogburn, Joseph Lilienthal, Edward Spingarn and Victor Rosen, visited Long Beach. At the easternmost end of the beach a Black Skimmer was flushed from the shore. It flew out over the surf and returned to the shore further along. It was found again and allowed a very near approach before again taking flight. The bird was not in fully mature plumage, being rusty black on the back. Two or three tips of the primaries of the right wing were broken, otherwise the bird was in good condition.—GEORGE E. HIX, *Brooklyn, N. Y.*

The Black Skimmer (*Rynchops nigra*) at Ipswich, Massachusetts.—Early in the morning of September 1, 1924, Mr. Baker saw flying over the estuary on the inside of the Ipswich dunes, six birds which he recognized as Black Skimmers. In the afternoon, we went together to the outside beach and saw in a flock of Roseate, Common and Arctic Terns, alighted on the sand and afterwards on the wing, three Black Skimmers. Their distinctive plumage and peculiar bill formation, which latter they displayed by opening their bills, made their identification easy and certain.

This is the first record for Essex County, Mass., but there are several records for Massachusetts in August, 1879, when three were taken at Sandwich, one at Falmouth and one in Boston Harbor, while in the same month and year a number wandered as far north as Grand Manan and St. Andrews, New Brunswick.—JOHN H. BAKER, *New York*, and CHARLES W. TOWNSEND, *Boston.*

Black Skimmer and Golden Plover in Bronx County.—On September 14, 1924, we noted a Black Skimmer flying north, off Hunt Point. Approaching us from the direction of "Hell-Gate," it hovered for a moment, and alighted on a mud-flat, not thirty yards distant, in company with a large number of Gulls. After taking wing, it flew by, and we were at once impressed by the remarkably long slender wings, the forked-tail, the sharply contrasting black and white coloration and the low, easy flight

over the water. None of us had ever seen the species before in life, but we were able to name it before referring to a text-book. Moreover, this is not a bird likely to be confused with any other North American species.

Our friend, Mr. J. T. Nichols, informs us that a "northward invasion" was under-way, this summer, the birds being recorded more freely in Long Island waters, than since 1898, when another such movement took place. He attributed the birds' presence "inland" to the storms which had been sweeping the coast line.

On the same date the writers met with a couple of Golden Plovers, on a nearby stretch of burned meadow. They were approached within seven or eight yards and were watched on the ground for over a quarter of an hour. A decidedly yellowish tinge covered the top of the head and the middle of the back. The call-note was heard at regular intervals. When the birds finally flew, we were careful to note the gray axillars which at once distinguish this species from the Black-bellied Plover. It is perhaps only proper to add that the writers have been long familiar with the Black-bellied Plover in life.—J. AND R. KUEIZI AND P. KESSKI, *New York City*.

Wilson's Phalarope (*Steganopus tricolor*) in Bronx County.—On September 21, 1924, at the New York Botanical Garden we observed a Wilson's Phalarope in company with about twenty Lesser Yellow-legs and two Stilt Sandpipers, in what was formerly known to local bird students as "Half-mile." Like the other Phalaropes our bird was quite tame, readily allowing an approach to within twenty feet.

The bird might be roughly described as decidedly smaller in size and "squatter" than the Lesser Yellowlegs. The bill was dark, long, and excessively slender, in fact almost needle-like. The crown and nape were a light grayish color, which extended down the back, the feathers of which were bordered with white. The primaries and secondaries of the wing were noticeably darker. The bird had a very prominent superciliary line. The throat, breast and belly appeared pure white. The color of the legs, yellowish. The characteristic "Phalarope mark" on the side of the head and neck was faintly visible. The bird spent most of its time wading; only occasionally did it indulge in swimming, and then to no great extent.

The writers were privileged to inspect the skins of *S. tricolor*, at the American Museum, the following day, and were satisfied that their identification was correct. It might be fitting to state that two of the undersigned had had field-experience with the Northern Phalarope. Late in the day the bird was seen by several other credible observers.—F. T. AND J. AND R. KUEIZI AND P. KESSKI, *New York City*.

A Remarkable Flight of Sanderlings.—In looking over some old photographic negatives, I came across one that settled the exact date of a remarkable flight of Sanderlings. Some of my friends have told me that this great flight deserved to be put on record, but without the exact date, which I could not remember, I hesitated to do so.

In the late summer of 1901, I and my oldest son, then a boy of sixteen were spending a short vacation down on Cape Cod, at South Orleans, Massachusetts, fishing and having fair success shooting shorebirds—with one gun between us—round Pochet Island and the salt marshes called Monument Plains.

On Sunday, September 8, there was a "dry norther," a furious gale from the north and northwest, without rain, cloudy in the morning, but clearing in the afternoon. Monday, September 9, broke bright and fine, with a moderate northerly wind, and thinking that the wind might have brought along the birds, we decided to go to the shore. My son took my gun, a sixteen-bore, and I borrowed a twelve-bore and a few cartridges. We rowed down our river and across the bay, and before we reached the island, it was evident that birds had arrived, for we saw a large flock of young Black-bellied Plover, as well as several Greater Yellowlegs, two of which I shot.

Landing on the inner side of the island, we walked across to the ocean beach—the "back beach," as they say on the Cape—and started to walk north toward Nauset Harbor, shooting, as we went, at the passing flocks of Sanderlings, which were fairly abundant, though not remarkably so. Somewhere about ten o'clock in the morning, my son had stopped to pick up some birds that had fallen into the surf, while I walked ahead a hundred yards or so and sat down on the dry crown of the beach, here about fifty yards wide, and felt in my pocket to see how many twelve-bore cartridges were left. To my disgust, I found only one! While I was ransacking the other pockets of my shooting-coat, something flashed in my eyes, and, as it seemed to me, thousands of Sanderlings whirled in from the north and pitched on the dry upper beach, the nearest not twenty feet from me. It was a wonderful sight, and I longed for the camera which had been left at home.

I called to my son, who came hurrying up, while the nearest birds moved off, though not out of gunshot. When we fired, they rose in a cloud—as my son put it, "It looked like a great gray wall spotted with white." Our few remaining cartridges were soon expended, but even then we picked up sixty or seventy birds.

The birds soon recovered from their alarm, and hundreds could be seen running round the dry beach and up the slopes of the dunes, picking up insects. I have no way of estimating the number of birds in the great flock: it was simply a cloud of birds.—JOHN MURDOCH, *Allston, Mass.*

King Rail Nesting on Long Island, N. Y.—On June 11, 1924, I was fortunate enough to be shown the nest of a Rail at Bayside, L. I., by Mr. R. C. Wright of Flushing. The nest was situated in a small cat-tail marsh of brackish water which bordered the salt meadows, and was about four hundred yards from a large creek which emptied into Douglaston Bay. The nest was composed of cat-tails and was situated on the ground, but well built up from it, the depth being five inches.

At first thought, I imagined it to be a Clapper Rail's nest, but on seeing the bird I quickly identified it as a King Rail (*Rallus elegans*). Its general resemblance to the Virginia Rail, together with the cinnamon neck and breast, and large size, left no doubt in my mind as to the identification.

The nest was found on May 24, when it contained thirteen eggs. On the next visit, one week later, fourteen eggs were observed. On June 14, I commenced to take pictures, and was quite surprised at the bird's fearlessness. Seven eggs hatched between June 16 and 20. My next trip to the nest was on the 21st, when I found seven eggs remaining, all punctured and the contents drained by some animal. The nest and remaining eggs are now in the Brooklyn Museum, where I deposited them.

It is interesting to note that the nest of a Virginia Rail was found not sixty yards from that of the King Rail. Marsh Wrens and Red-winged Blackbirds were also to be found nesting in close proximity to the nest.—WM. J. HAMILTON JR., *Ithaca, New York*.

Nesting of Great Blue Heron in Boothbay, Maine.—In the spring of 1924, Mr. Frederic O. Whitman of Boothbay, Maine, found a nesting colony of Great Blue Herons (*Ardea herodias herodias*) which had been reported to us the year before, and for which we had unsuccessfully hunted late in the summer of 1923, after the birds had left.

The heronry is located in the woods between the Knickerbocker ponds and the Backriver branch of the Sheepscot river, and is about two hundred yards westward from the shore of the northern end of the ponds. Mr. Whitman counted sixty-five nests of which surely forty were occupied in 1924. The bulky structures are all in hardwood trees, most of them in beeches, a few in the maples, and one in a birch. Not a single one was found in the pines or other coniferous trees, although the heronry was in their very midst. On June 6, Mr. Whitman counted sixty-four young birds peering over the edges of the nests. On July 26, when he and I visited the site together, nearly all the immature herons could fly, and with the old birds would leave the nests with much flapping and squawking when they became aware of our presence. But there were others not yet ready to trust to their wings. These stood motionless on the nests or branches, craning their necks, evidently much disturbed. We found on the ground one whole nest that had fallen, and with it the remains of three young birds. More remains of young ones were found here and there under the trees. The ground in the vicinity of the nests was white with the droppings, and the odor of this and of disgorged fish was far from agreeable.

In view of the fact that such large colonies of Great Blue Herons are no longer common in Maine, I believe this one to be of interest.—THOMAS E. PENARD, *Arlington, Mass.*

Little Blue Heron in Massachusetts.—On the morning of September 4, 1924, I saw an immature Little Blue Heron (*Florida caerulea*) in Hingham, Massachusetts, in the small and shallow brackish pond which has

been formed through the cutting off of the inner end of Broad Cove by the State road. The bird, which was notably larger and more slender than a Little Green Heron standing not far from him, appeared to be pure white with jade-green legs, and bill yellowish for about half its length, then blackish. I was not able to detect any blue in the wings even when the bird flew. In the evening of the same day, and again on the morning of September 8, I found him in the same pond.—S. F. BLAKE, *Washington, D. C.*

American Egret (*Casmerodius egretta*) and Little Blue Heron (*Florida caerulea*) in Brooke Co., W. Va.—There are so few published records from West Virginia that it is difficult to know what birds may actually be new to the State's avifauna, but it is thought that the Egret and Little Blue Heron are sufficiently rare to warrant particular notice here.

On June 14, 1921, a large white Heron was seen along Buffalo Creek and Castleman's Run, near Bethany, W. Va., and subsequently shot by a man whose name has not been ascertained. The specimen came into the hands of Mr. Doc Jones, was rather poorly skinned by a friend of his, and in a flat condition was examined by me on June 18, and easily identified as an American Egret. The bird's skull had been almost completely removed during skinning, but the plumage and condition of the feet and bill indicated immaturity.

August 9, 1924, near Bethany, W. Va., I observed a Little Blue Heron in white plumage, for half an hour, and satisfactorily identified it by its pale green feet, dusky wing tips, and small size. The bird was very unsuspicious, allowed close approach a dozen times, and was viewed in ideal light. Farmers had reported two of these "white cranes," and it is reasonable to suppose that both birds were of the same species.—GEORGE MIKSCH SUTTON, *State Game Commission, Harrisburg, Pa.*

Correction.—I much regret that owing to a mistake in field diagnosis the conditions found in the digestive apparatus of the Fijian Nutmeg Pigeon were ascribed to *Globicera pacifica* ('The Auk,' p. 433, XLI, 1924) and not to *Muscadivores latrans*, as they should have been.—CASEY A. WOOD, *Authors' Club, London, England.*

Late Nesting of the Scaled Quail (*Callipepla squamata squamata*).—September 22, 1924, an Indian boy reported that he had found a bird's nest with a number of eggs. I went along with the boy, expecting to see an abandoned Quail's nest. The boy led me to a large sage bush near a fence on the U. S. Indian School field. Carefully spreading the bushy sage in order to get a look at the nest, I, to my great surprise, saw a Scaled Quail on the nest incubating. She stayed on for a few seconds and then left, diving through the bush and flying and running out of sight.

The nest contained a complement of 10 eggs on the verge of hatching. A couple of the eggs were chipped, and I could hear the chicks in several others.

Two days later I again visited the nest and found it empty except for a few shells, which bore evidence of hatching. I believe this to be an exceptionally late nesting, as we here, at an altitude of 7000 ft. above sea level, have early frosts; and several days before the nest was found, ice one-fourth of an inch thick had formed on quiet pools.—J. K. JENSEN. *U. S. Indian School, Santa Fe, N. M.*

Another Record of the Ruddy Quail-Dove at Key West.—The National Zoölogical Park has recently received from Mr. Ross C. Sawyer, Key West, Florida, a living specimen of the Ruddy Quail-Dove (*Oreopeleia montana*). Since this widely distributed tropical dove is included in the A. O. U. 'Check-list of North American Birds' on the basis of a single specimen taken at Key West in 1888 (Scott, 'Auk,' vol. 6, p. 160, 1889), it seems important to place this additional occurrence on record. Mr. Sawyer writes me that he caught the Dove in his back yard in Key West, about May, in 1923.—N. HOLLISTER, *Washington, D. C.*

Black Vulture at Grand Manan, New Brunswick and Ipswich, Mass.—On August 9, 1924, near North Head, Grand Manan, my attention was attracted by a large black bird that was flying up from a pasture. After laborious flappings, it rose in circles and reached a great height where it circled with very little movement of its wings. From there it glided downwards, passing directly above me as I stood on a rocky hill-top. When first seen below me, I noticed an ill-defined patch, grayish-white in color towards the base of the primaries on each wing. I also noticed the rather short tail, and, as the bird glided overhead, saw the small naked black head which made its identification as a Black Vulture certain.

On examining a couple of skins of this bird, I found that the exposed middle portions of the primaries, seen from above, made a whitish patch formed by the gray webs and white shafts of the feathers.

There are previous records for the Black Vulture at Grand Manan and at St. Stephens, New Brunswick.

On November 2, 1924 when about two hundred yards from my home, at Ipswich, Mass., I was surprised to see a large dark bird that in shape, color, and manner of flying recalled at once the Black Vulture I had seen at Grand Manan. It disappeared behind a group of trees around which I ran so that the bird came out within fifty yards of me and in good light.

The hooked bill and black naked head were easily seen and from below the wing feathers showed distinctly gray, a point I had not been able to observe at Grand Manan, as the sun was in my eyes when the bird was above me. There have been previous records of the Black Vulture in Essex County.—CHARLES W. TOWNSEND, *Ipswich, Mass.*

Swallow-tailed Kite in Southern Michigan.—A specimen of Swallow-tailed Kite (*Elanoides forficatus*), was brought to my laboratory October 4, 1924 by a Mr. Harold Burke. The bird was shot some two miles north of Ypsilanti, Michigan by a farmer, who reported that it had

been bothering his chickens for several days. Mr. Burke had examined and destroyed the stomach without my seeing it. He said it contained remains of crickets and beetles.—T. L. HANKINSON, *Ypsilanti, Michigan*.

Goshawks in Northern New Jersey.—A young Goshawk was killed on October 17, 1924, at Russia, New Jersey, and on October 25, with Col. Wirt Robinson I shot an adult at my blind in the Kittatinny Mountains in northern Sussex County, which decoyed to my stuffed Owl. Another large Hawk which I have no doubt was a Goshawk was seen and described to me at my country place at Stag. A regular invasion of these birds means a depletion in our stock of Ruffed Grouse. Some years ago I killed sixteen Goshawks in one winter.

On September 28, 1924, I shot a Duck Hawk on the Kittatinny which bore a band No. 204970 and which I learn from the U. S. Biological Survey was banded by Albert A. Cross at Woronoco, Mass., on June 1, 1924.

There has been no great flight of Hawks through northern New Jersey this autumn as the weather has been too fine and settled.—JUSTUS VON Lengerke, *Orange, N. J.*

The Barn Owl (*Tyto pratincola*) in Schenectady County, N. Y.—A pair of Barn Owls reared a brood in a barn three miles east of Schenectady this year. I was told that there were white Owls breeding at the place and the owner of the barn brought me one of the young on August 23, last, which was full grown but only partially feathered. As I held it in my hands it uttered a continual shrill screeching rattle. According to Eaton's 'Birds of New York' this is the first record for this county and the third for a radius of 100 miles about Schenectady.—EDGAR BEDELL, *Waterford, N. Y.*

Barn Owl (*Tyto pratincola*) Breeding at Madison, Wis.—The writer has seen but one specimen of this uncommon Owl during the last fifteen years. This was on August 25, 1917. It is of interest to record a recent breeding record. On October 1, 1924, five fully grown young were discovered by workmen while repairing a gable at the State Hospital on Lake Mendota. Dr. Corydon G. Dwight, who was instrumental in the capture of the birds, has added them to the zoölogical collection at Vilas Park.—A. W. SCHORGER, *Madison, Wis.*

Richardson's Owl at Grand Manan, New Brunswick.—On August 7, 1924, on the top of a telegraph pole by the roadside near North Head, Grand Manan, I saw a Richardson's Owl and watched it with eight-power binoculars within thirty yards for ten minutes. It was then startled by a horse and wagon, flew to a spruce from which it again flew at my approach and disappeared in the woods.

I wrote down at the time the following points observed, all characteristic of Richardson's Owl: about ten inches long; rounded head destitute of ear tufts, buff with a few white spots; back brown with large white spots;

breast and belly buff with dark bars; bill yellow; outer edge of facial disk, black; eyes, yellow.

The sun was shining brightly but the bird apparently saw and watched me closely, frequently turning its head as if to look directly at me. On its second flight, it was off before I had come within forty yards of it. The books generally state that this bird is "blind" in bright light.—CHARLES W. TOWNSEND, *Boston, Mass.*

An Ornithological Engima.—For several years I have heard accounts of a band of Parroquets existing in the country along the edge of the open Everglades west of Palm Beach and Lake Worth. Last spring I heard again and this summer I asked an old hunting companion of mine to go in, locate the band and, if possible, shoot a single specimen for purposes of identification. This he did. He found the birds, about a dozen in number, extremely shy and wild and feeding on the "cones" of high cypress trees. He had no easy time in stalking and securing an example which he sent me and which upon being examined by Mr. Outram Bangs, proved to represent *Aratinga holochlora holochlora* (Scater) a form occurring over Eastern Mexico and Guatemala.

I have no knowledge whatsoever which leads me to suppose that this bird is frequently brought into captivity and still less reason, at present, to suppose that anyone in Florida may have had specimens which could have escaped and established themselves. The possibility that anyone has released a flock of Parraquets seems even less likely, although I believe that from time to time some birds have either escaped or been liberated from the aviaries which Mr. Deering maintains near Miami. The other possibility, namely that these birds may have always existed in Florida, I regard as practically inconceivable, while at first sight the chance that the band might have been blown from Mexico and established in the Everglades seems almost equally improbable. An escaped pair may have been breeding, however, and this in itself is of no little interest.

The record, in any case, has provided a fascinating opportunity for speculation to all of us hereabouts.—THOMAS BARBOUR, *Mus. Comp. Zool., Cambridge, Mass.*

Notes on the Nesting Habits of the Northern Pileated Woodpecker.—The nesting-hole was in Petersham, Worcester County, Massachusetts in a dead poplar bole bare of limbs, over fifty feet high, in mixed woods of white pine, hemlock, red oak, white, yellow and sweet birch, sugar maple and poplar. The hole was oval in shape about five feet from the top on the north side. Around the base of the bole numerous large chips were scattered. On June 11, 1924, I spent five hours within twenty-five feet of the base of the stub, unconcealed, and on June 14, six hours, but after the first hour I took up a position about fifty yards away, partially concealed by bushes.

My observations may be summarized as follows: the young were fed eleven times at the first visit, four times at the second when the adults

acted in a very shy manner. As a rule the female fed the young, but on three occasions the male was identified at the hole by the greater extent of the scarlet crown anteriorly and by the scarlet stripe at the base of the bill.

Alighted at the side of the hole, the large black bird with its long narrow neck, its conspicuous scarlet crest extending to a point behind, its sharp defined black and white face markings, its yellow irises and its long pointed bill made an unusual and striking bird picture. A small triangular patch of white on the upper surface of the wings alone broke the black of the rest of the plumage.

As a rule the adult appeared suddenly at the hole, flying noiselessly through the forest. Occasionally it alighted below the hole and rapidly ascended by hops, or it alighted on some neighboring tree, and often calling like a Flicker, glided on motionless outstretched wings in a graceful curve to its young. The flight away from the hole was always direct after a preliminary downward glide and lacked the usual Woodpecker undulations. As seen from below, the white markings on the wings were conspicuous.

The three young crowded to the hole as soon as a parent appeared anywhere in the neighborhood and eagerly stretched forth their heads and necks. Their red cockades, black mustachios and pointed noses reminded me of an old caricature of French soldiers. They were always hungry and screamed with rasping voices for food, once or twice they uttered low whinnies. The adult inserted its bill to its full length into the throats of the young and vigorously regurgitated and pumped in the nourishment. The mandibles of the young reached up on the side of the adults' face. This method of feeding was used on both occasions. On the last time the young appeared two-thirds grown. After feeding the young, the female on several occasions, the male on one, entered the nest, to emerge after a minute or two and glide away. Once I detected a white piece in the bill, once, something dark, but the other times nothing at all. Once the female, after feeding the young who remained unsatisfied and were eagerly reaching out for more, started to enter the hole to clean it, and was obliged to push back the young who kept boiling over and out as fast as she pushed them back. Finally, amid a confused turmoil of red cockades and black and white face markings, she managed to push them all back and enter the hole.

Twice, when Crows flew by the nesting bole, cawing on one occasion, the young appeared at the hole and eagerly looked up at them. At another time a Hairy Woodpecker alighted, calling, on the stub and ascended it for a few feet, tapping vigorously, but the entrance hole remained vacant.

Pileated Woodpeckers seem to be able to detect borers in the hearts of trees apparently sound. One may find a white pine in full leaf with large mortised holes, a foot long and six or eight inches deep, in the sound wood, but such trees when cut down are sure to show white ants or other borers in the centre. Professor R. T. Fisher of the Harvard School of Forestry, at Petersham, made to me the ingenious suggestion that these

birds detected borers by percussion, for a sound tree when struck gives forth a peculiar ringing note, while one whose heart is riddled with borers sounds dull and dead. The forester in this way is able to distinguish the unsound from the sound. It is possible that the bird with its sensitive beak may also feel the difference as does the expert physician in percussing a chest.—CHARLES W. TOWNSEND, 98 Pinckney St., Boston, Mass.

Habits of the Flicker.—On August 24, 1924, I observed at Guelph, Ontario, Canada, a Migrant Shrike fly into a small tree in which were four or five Northern Flickers as if it were about to attack them, but they paid no attention to the Shrike and the latter did not venture to attack, and in a few minutes a Sparrow Hawk flew into the tree among the Flickers and they paid no attention to the Hawk. A few minutes later the Sparrow Hawk flew into another tree upon which was sitting a male Northern Flicker. The Hawk flew to a twig within twelve or fifteen inches of the Flicker. The latter immediately faced about so as to point his long bill at the Hawk, but otherwise seemed to ignore the latter and remained motionless. The Hawk faced the Flicker for a few seconds and then began to preen its feathers and in a few minutes flew away leaving the Flicker undisturbed. In both cases the Shrike and Hawk swooped down on the Flickers as if they meant to attack and then hesitated and decided they had better not.—HENRY HOWITT, Guelph, Ontario.

Will the Starling Learn to Migrate in this Country?—During the last week of March and the first week in April, 1924, several interesting observations were made on the Starling (*Sturnus vulgaris*) on or near the Homewood Campus of Johns Hopkins University.

At the time mentioned, the Purple Grackles (*Quiscalus quiscula quiscula*) had already begun to arrive from the south. The flocks observed were usually small, numbering on the average about 20–30 birds. On March 30, 1924, it came as quite a surprise to discover that the Starlings were flocking with the Grackles in about equal numbers.

By the last of April flocking activities had largely given way to the preoccupation of nest life, for two nests of Grackles and three of Starlings were observed on the college campus. At the time, only brief notes were made of the incident and the matter then quite forgotten.

Upon returning to Baltimore (September 26, 1924) to resume academic activities, great flocks of Grackles were observed about the campus and nearby parks, and were reported to have been in the neighborhood in flocks for about three weeks previous to my arrival. Toward evening smaller flocks augmented the larger one already in the wooded section, and added their voices to the din of noisy chortlings made by the assembled birds. An estimate as to the numbers would probably be inaccurate, but there must have been at least three or four thousands of them. During the day the main flock broke up into smaller flocks of a hundred or more, and could be observed in various places on the campus at almost any time until the 18th of October when most of the birds had left the neighborhood.

Observations on the small flocks, and also the large one which congregated in the evening, always revealed great numbers of Starlings in the assemblage—in fact, the Starlings at times seemed to outnumber the Grackles.

In this country the Starling has apparently not learned to migrate as yet, though the species is rapidly spreading as evidenced by numerous reports constantly made farther and farther away from the original place of dispersal (Central Park, N. Y. City).

While in England the Starling seems to be more or less of a resident all the year around, on continental Europe he is a partial migrant, i. e., some birds remaining over the winter, others migrating, for Starlings are said to be found in southern Europe and northern Africa abundantly in the winter, but are quite scarce or totally absent thereabouts during the summer.

The Purple Grackle migrates regularly throughout its range, and the question is raised whether this gregarious association of the Starlings and Grackles may not in time make the Starling a regular migrant as well. He is quite a cosmopolitan fellow and through social relations of this type might easily acquire the habit. Indeed, the recorded occurrences of Starlings from Canada and other places, distant from the original place of dispersal, may have been largely caused by an association of this kind with flocks of migrating, native birds.¹ By joining migrating birds of the eastern coast section, which converge with western and central migrants on the southern range, the Starling may gain an extremely wide dispersal in a comparatively short time; some birds returning over the old route, others remaining in the South, while still others flock with birds returning north along the Mississippi drainage system.—EVERETT C. MYERS, *Johns Hopkins University, Baltimore, Md.*

Bobolink in Colorado.—As indicated by Burnett in the October number of 'The Auk,' the Bobolink is considered a rare bird in Colorado. I have often wondered if this is not merely because most ornithologists do not visit localities favorable for them at the right season. For many years I have found males of this species common in pastures immediately east of Boulder during the first week in June, but have not seen the females. Being away from Boulder after that time each year, I have never followed the matter up to ascertain whether the females appear and nest there. However, last summer Mr. Earl Theron Engle found in another meadow near Baseline Reservoir, southeast of Boulder, three males and four or five females, on July 25, 1924. He says the identification of the males was entirely certain, but the females not so certain, though they were with the males. No nests were found, but the date strongly suggests birds which had nested in the vicinity. It seems scarcely likely that the species

¹ Three Starlings were observed July 1, 1924 near University Circle, Cleveland, Ohio.

should come so regularly to one very limited locality and not appear at other localities of similar environment with like regularity. One cannot rely at all upon reports of Bobolinks in Colorado unless they come from persons with some ornithological training, as the Lark Bunting is generally called the Bobolink, its black body and head, its white wing patches, its song, and its habit of rising in the air and singing as it descends being responsible for the erroneous identifications, though the absence of the buff nape and white lower back and tail-coverts readily distinguishes it from the Bobolink.—JUNIUS HENDERSON, *Boulder, Colorado*.

Domestic Affairs of *Spizella p. passerina*.—In these troublous days when all the world's awry, when morality among humans is seemingly at its lowest ebb, and when some of our avian friends, such as the House Wren, are charged with unbecoming practices and marital relations not substantiating the time-honored belief that birds mate for life, it is gratifying to turn to the other side of the picture.

In Cohasset, Massachusetts, on May 24, 1923, two Chipping Sparrows were taken together in a pull-string (drop-door) trap and were given numbers 34469 and 34471. At a later date these were found to be mates, 34469 being the female. In an attempt to find a fairly permanent method of coloring bands, and thus making it possible often to identify birds without trapping or handling them, the female's band was stained blue with a diamond dye and then coated with valspar varnish. This experiment was successful for thirty days, by which time the stain had flaked off.

Both Sparrows repeated together on May 25. On June 24, they were taken together again at which period they were frequently together in the trap, after food for their uncontrollable youngsters, calling from an apple tree close to the house. Again on September 5, 1923, after the nesting and molting seasons were over, they were once more captured together and they continued to visit the trap up to the sixteenth of the month, showing that the mating relationship still obtained. The last visit to the trap for the season of 1923 was by the male No. 34471, on September 29, at which time this species occurred in flocks in the neighborhood, no doubt preparatory to migration.

During the nesting season of 1924, Chipping Sparrows were first seen about the banding station the latter part of May, and among them two banded birds were noted for several days. On June first, Mrs. Whittle saw them enter the trap together and their numbers proved to be returns 34469 and 34471. It is not known whether they migrated south together or returned together. When the territory lying between the summer and the winter homes of this species shall be properly organized for bird-banding work, questions of this kind undoubtedly will be answered. From June 1 to August 15, 1924, this pair of birds visited the station daily and usually several times each day, and during this period they have raised two broods of two birds each. In the case of each brood, a few days prior to the termination of the parental relationship, the young birds followed

the old ones to the trap in which the youngsters were fed by their parents, thus furnishing proof of their kinship. The band numbers borne by the first brood are 86443 and 86444 and by the second brood 6002A and 6003A.

The record to date shows that this pair of Chipping Sparrows has lived together throughout the nesting seasons of 1923 and 1924, and that during this time they have raised at least three broods. It also shows that the mated relationship was maintained in 1923 after all family cares were over, in fact up to the probable time of migration. It is of course not known whether the history of this pair is an exceptional one or a normal one. Further observations will doubtless settle the matter. Bird banding, even at a single station, affords a definite means for obtaining many minute details of a species' life history and the work is both of value scientifically and of great fascination.

The data given above and much more not pertinent to this note, were secured by operating a single 34" X 34" pull-string trap placed on the ground about ten feet from a window, just inside of which there is a table in which the paraphernalia of banding are placed; where all birds trapped are handled, studied and banded, and where systematic, daily, all-the-year-round notes of all the happenings, birdwise, about the station are recorded.

Perhaps this little story of the domestic affairs of these birds may encourage others, who cannot operate a large banding station on account of the time and labor involved, to take up bird-banding on a less ambitious scale. I think it can be safely asserted that a single well-located and conscientiously-operated pull-string trap will yield ornithological data of value, the more careful and detailed the observations and the more unremitting the taking of notes, the greater the scientific output.—CHARLES L. WHITTLE, Cohasset, Mass.

Violet Green Swallow in Illinois.—During the early seventies, George F. Clingman was my constant companion on collecting trips through the (then) wilderness of swamps and woods known as the Calumet region, which is now in Chicago—some of the rarer birds taken have already been recorded by authors of Illinois bird lists.

Later Wm. Clingman began a systematic collection of the birds of the Chicago area, most of which are mounted, and has presented it to the Bryn Mawr High School.

Recently he asked me to identify some of the birds, among which I was surprised to find a male *Tachycineta thalassina lepida* taken May 4, 1897.

Other rather rare species for this locality are a male Whistling Swan at Calumet Lake, Cook Co., Ill., March 20, 1894; a fine male *Falco peregrinus anatum*, September 29, 1899—also a female *Cathartes aura septentrionalis*, May 3, 1899, and a female *Centurus carolinus*, April 2, 1897. A rather late record of *Ectopistes migratorius* is a young male, September 30, 1901. These birds were collected in what is now the thickly built up

Bryn Mawr district near 75th and Stony Island Avenue. On June 18, 1889, Mr. Clingman took a nest and one egg of the Passenger Pigeon at Baldwin, Michigan.—HENRY K. COALE, *Highland Park, Illinois*.

Prothonotary Warbler in Erie Co., N. Y.—On May 20, 1923, while passing through some low, rich woods south of Hamburg, I was much surprised to find a bird that I immediately recognized as a fine example of this species. I had never met with *Protonotaria citrea* in life, but the markings were unmistakable; moreover, the bird spent most of its time on or near the ground, keeping to the margins of small ponds, and was not at all shy.

Mr. Ralph M. Harrington, of Hamburg, was with me at the time, and we watched the beautiful straggler for perhaps half an hour. My companion had a copy of Reed's 'Bird-Guide' with him, and we had ample opportunity to check up on the description as given there. Our bird was probably a male, on account of the rich orange of the whole head, neck and breast; we noted also the white markings in the tail, the absence of wing-bars, the greenish-yellow back and the grayish rump. Careful notes regarding details of plumage pattern were made on the spot, and later checked with the description appearing in Chapman's 'Warblers of North America.'

The bird was silent during the entire period of observation. Although it flew several times to other small ponds in the vicinity—and its flight is remarkably swift—it was readily located and observed. Positively no doubt exists in my mind as to the correctness of the identification, although I can find no previous record of the occurrence of the Prothonotary in the extreme western counties of New York. Mr. James Savage, however, has kindly called my attention to the record for Hamilton, Ontario, appearing in McIlwraith's 'Birds of Ontario' (1894). The date is May 23, 1888; and the specimen, a female, was collected by K. C. McIlwraith.

An interesting sequel to the Hamburg occurrence is the experience this year of Dr. Anne E. Perkins, of Collins, N. Y. who on May 22, 1924, found her first Prothonotary at Collins, eighteen miles distant from Hamburg (Bird Lore, 1924 p. 258).—THOMAS L. BOURNE, *Hamburg, N. Y.*

Nesting of the Prothonotary Warbler in Northern New Jersey.—On June 30, 1924, Rev. W. D. Quattlebaum of East Orange, New Jersey, discovered a Prothonotary Warbler (*Protonotaria citrea*) entering a hole in a stump near the Passaic River at a point between West Caldwell and Pine Brook, New Jersey. This interesting news was reported and on July 5, we accompanied him to the spot. Here, situated within one hundred and fifty feet of one of the busiest auto roads of northern New Jersey, we were shown what we believe to be the first breeding record for this bird in the State. The nest site was in a decayed red-birch stump, the opening being 8 feet from the ground, within a foot from the top and facing southeast. The site was one hundred feet from the river proper, but

during the spring rains the river had overflowed much of this territory and upon receding had left a number of small ponds. On the edge of one of these the nest stump was located. The two most common trees near this site were the red-birch (*Betula nigra*) and the silver maple (*Acer saccharinum*), while poison ivy (*Rhus radicans*) over-ran everything on or near the ground.

Upon investigation we found that the nest contained two young. Both parents entered the nest-hole with food and with little concern because of our presence, the male singing frequently.

On July 9, the birds were observed by Messrs Quattlebaum, W. DeWitt Miller, W. G. Van Name and Carter, the two young birds being banded by the last. Again the male was in full song. At dawn on July 11, we found that heavy rains had caused the river to again overflow, the ground about the nest site being flooded. While we were not prepared for this emergency and did not visit the nest, observations from the road disclosed the birds entering the nest-hole, and the male was heard to sing occasionally. Messrs. Maunsell S. Crosby and Ludlow Griscom visited the spot the same day, arriving about noon, and while both parents were observed, they were not seen to visit the nest and the young were not in evidence. It is possible that the nest was vacated during the forenoon. On July 13, Howland did not find the birds in the vicinity.

The diameter of the opening to the nest-hole was one and three-eighths inches, the nest being 2 inches below the opening. The nest was composed principally of decayed leaves, plant stems, a little moss and plant fibre, the cup being lined with very fine rootlets, fine grasses and leaf stems, a little moss and a strand or two of horse-hair. The cup was two and one-quarter inches in diameter, one and one-quarter inches in depth. The cup was entirely open on one side, the nest conforming to the shape of the inside of the trunk. The nest was most compact and weighed five-sixteenths of an ounce.—R. H. HOWLAND, T. DONALD CARTER, *American Museum of Natural History, New York City.*

The Prothonotary Warbler in So. New Jersey in Summer.—On June 15, 1924, Mr. Turner E. McMullen and the writer saw a pair of Prothonotary Warblers, (*Protonotaria citrea*) while hunting for Parula Warbler's nests, in the lower end of Beaver Swamp, in Cape May County, New Jersey. They were found along a sluggish stream deep within the swamp, the vegetation of which consisted chiefly of sour gums, with dense undergrowth of red maple, holly, magnolia, sweet pepperbush, etc. Judging by their behavior they had young out of the nest close by in the shrubbery, but we had not the time to search for fledglings; the female was the boldest and flitted nervously about with her bill full of insects, often within several feet of us. The Prothonotary Warbler is an extremely rare bird in south Jersey where it is not supposed to breed, and has never to my knowledge been seen in summer except by Mr. Julian K. Potter ('Auk,' 1915, p. 370), who saw a bird in a swamp in Cumberland County.—RICHARD F. MILLER, *Philadelphia, Pa.*

Prothonotary Warbler Feeding Young of Another Species.—On July 2, 1924, in company with Dr. H. Justin Roddy and Clifford Marburger, I came upon a female Prothonotary Warbler feeding a fledgling with whitish wing-bars. The locality was the edge of the Barrens near the Octoraro Creek at the line between Lancaster and Chester Counties in south-eastern Pennsylvania. We were within fifteen yards of the birds, which made the identification of the female a certainty, and we watched the feeding act repeated six or eight times.

The observation was a mystery to all of us. None of the specimens of the young of *Prothonotaria citra*, which Dr. Chapman showed me on a recent visit to the American Museum of Natural History, show the slightest indication of wing-bars; and my suggestion of a possible reversion to an ancestral type was made less likely by the statement of Mr. J. T. Nichols, of the same institution, that of all Warbler characters within his researches, wing markings are among the most stable.

I am now convinced that the fledgling bird was a Pine Warbler (*Dendroica vigoensis vigoensis*) a species which is plentiful in the region. Our record is also interesting as being the first authenticated observation of a Prothonotary Warbler in Lancaster County during the breeding season. Possibly this bird, on the extreme edge of the range of her species, was without a mate and her unsatisfied sex instincts found expression in an adoption. The record is paralleled by that of a House Wren feeding young Black-headed Grosbeaks, published in the last issue of 'The Auk,' p. 615.—HERBERT H. BECK, *Franklin and Marshall College, Lancaster, Pa.*

Connecticut Warbler in Spring Migration in Central New York.—

On June 4, 1924, while running a series of small mammal traps in the McLean Wild Life Preserve, near Ithaca, New York, I found a Warbler caught by the wing in one of the traps, set in the middle of a dense alder thicket. The bird had apparently flushed close to the trap, striking the pan with its wing, and thus springing it. I identified the bird as a female Connecticut Warbler (*Oporornis agilis*), and was upheld in this identification by Dr. Arthur A. Allen. The bird was apparently one of last year's brood, as the skull was somewhat granular. It is now No. 1895 in the Cornell University Museum collection.

This is, I believe, the first spring record for this Warbler in the Cayuga Lake Basin.—DANA J. LEFFINGWELL, *Laboratory of Ornithology, Cornell University, Ithaca, N. Y.*

Mockingbird in Central New York.—On March 3, 1924, several persons at Aurora, New York, noticed a peculiar bird feeding on the ground. No one knew what this bird was, although one or two thought it might be an abnormally colored Catbird. From the color description given me by Miss Katherine Fuertes, I concluded that the bird was a Mockingbird (*Mimus p. polyglottos*), and this conclusion was further substantiated when Miss Fuertes mentioned the angle at which the tail was carried, and the

habit which the bird had of lifting its wings at each step. Later several other bird lovers identified the bird as a Mockingbird when shown the plate in Eaton's 'Birds of New York.'

From March 3, the Mockingbird was seen almost daily by various members of the community until April 5, when it was last noticed. When first seen, the bird appeared to be slightly lame in one leg, but later it seemed to have been cured. The Mockingbird came to several feeding stations, where it fed largely on raisins and suet and bread crumbs.

This is, I believe, the first record for the Mockingbird in the Cayuga Lake Basin.—DANA J. LEFFINGWELL, *Laboratory of Ornithology, Cornell University, Ithaca, N. Y.*

Mockingbird (*Mimus polyglottos polyglottos*) Nesting in Cohasset, Mass.—On July 13, 1923, two Mockingbirds were seen at Mr. Henry Nickerson's estate "Briarfield," Cohasset, Massachusetts.

Previous to their appearance there, two Mockingbirds were reported on June 25, one mile from "Briarfield," and on July 11, and 12, about two miles away.

The Mockingbirds were observed at "Briarfield" by Mr. and Mrs. Henry Nickerson, Mr. Conover Fitch and Mr. and Mrs. Richard B. Harding from 7:45 to 8:45 P. M. in Eastern daylight time on July 21.

One of the birds appeared to have more conspicuous patches of white in its wings, than the other. This was especially noticeable, while the bird was in flight.

A nest partially completed was found in a blueberry bush. It was loosely constructed of twigs like a Catbird's nest 5 feet 6 inches from the ground and was not identified at that time as belonging to the Mockingbirds.

During the hour they were under observation, one of the birds gave the following imitations, besides a number of songs and calls, which were not recognized:

Whip-poor-will—excellent. Northern Flicker—excellent and followed each time by superfluous notes. Great Crested Flycatcher—excellent. Catbird (both song and call)—good. Blue Bird—fair. Baby chicks—good. Blue Jay—poor. Bobolink's song—incomplete. Phoebe—excellent. Goldfinch—good. Bob White (the first note of call only). Towhee ("Drink your Tea")—excellent. Woodcock ("Ping")—good. Mr. Nickerson had previously noted an imitation of the Guinea Fowl and Mr. Charles L. Whittle of Cohasset, Massachusetts, subsequently added the trill of a Tree Toad to the list, making a total of fifteen different songs and calls.

During the latter part of July, Mr. and Mrs. Nickerson heard one of the Mockingbirds sing in the daytime and occasionally at night—both with moonlight and in the darkness.

On August 11 Mr. Nickerson looked into the nest previously noted and was amazed to find it occupied by four young Mockingbirds, about two

days old. Mr. Whittle also saw the young birds on that date and noticed that one of them was much smaller and weaker than the others.

On August 15, the weakling had vanished and the other three young birds were banded by Mr. Conover Fitch and Mr. Richard B. Harding. Their feathers had started to burst from the quills.

On August 18, Mr. Whittle reported that the young birds showed fear for the first time.

Mr. James MacKaye and Mr. Farley from the Division of Ornithology, State of Massachusetts, observed the family and nest on August 19. The next day the young left the nest under normal circumstances.

The adult Mockingbirds were last seen on September 6, near their nesting site. This appears to be the fifth nesting record and the second banding record for the state of Massachusetts (See Allen, 'Auk,' 1909, pp. 433 and Wright, 'Auk,' 1921, pp. 382).

The many observers who saw the nesting Mockingbirds are greatly indebted to Mr. and Mrs. Nickerson for welcoming them so cordially at "Briarfield" and also for their coöperation in keeping a record of the bird's activities.—KATHARINE C. HARDING, 94 Westbourne Terrace, Brookline, Mass.

Blue-gray Gnatcatcher and Carolina Wren in Minneapolis.—

On April 18, 1924, I saw a male Blue-gray Gnatcatcher just south of the city limits in the lowlands of the Mississippi River at Fort Snelling.

Two days later one was seen on the banks of the Minnesota River at the Fort and on April 25, several members of the Audubon Society saw two which seemed to be a pair in the same locality.

About the beginning of the second week of May, 1923, Mrs. J. L. Wicks saw a Gnatcatcher well within the city limits on two successive days.

On April 29, 1924, I saw a Carolina Wren near Lake Calhoun in the city and a few days later Mrs. Wicks saw one within a mile of the same place.

No evidence could be found of the nesting of either of these birds, but their presence here together with that of the Cardinal Grosbeak, the Tufted Titmouse, and the Red-bellied Woodpecker, already reported this year, indicate the progress that is being made in the northerly extension of the austral fauna in Minnesota.—FRANCES S. DAVIDSON, *Minneapolis, Minn.*

Notes on the Water Ouzel (*Cinclus mexicanus*) in the Mountains of Colorado.—

During July and August, 1924, it was the pleasure of the writer and family to make a study of a plucky little inhabitant of the mountain regions of Colorado, the American Dipper or Water Ouzel. The particular family observed had built their nest on the banks of a swift stream which ran through Calcite, a mountain village at the base of the Sangre de Cristo Range of the Rockies.

Practically all their food is secured from mountain streams. The male

and female would fly close to the water, following the course of the stream. When they came to a favorable place, they would drop to a stone, and then wade into the water, soon disappearing under the surface. They swam with legs stretching as if for a race, and used their wings to propel them through the water. It made no difference how swift the current, for they can swim with and against the stream with equal ease. The tail is little more than half as long as the wings, and is used for steering purposes and seems to be an important factor in raising themselves into the air. The birds seldom make an excursion under water without finding some food, mainly grubs.

The nest of this family was located three feet from the surface of the water, right at a sudden fall of the stream where the spray would dash along the bank. It was a beautiful oven-shaped structure with its opening on the side, and was made of green mosses kept fresh by spray and placed among roots and moss so that it was effectually camouflaged.

The birds soon became friendly and I was able to get quite close for observations. The little birds were hatched July 1 and 2, and I succeeded in banding them on July 8. They became Nos. 64538, 64539, 64540 and 64541.

Both parents were kept busy feeding the young. The "cut, cut, cut" of the adults as they flew up and down stream for food, and the answering hungry call of the small birds, could be heard from dawn until dark. By actual count, on five different occasions, and at different hours of the day, the writer found that the male parent made ten and twelve feedings to each hour, and the female from ten to fourteen feedings. These observations were made at different hours on July 17, 18, and 20, and indicated that the small birds divided among them the food brought by the parents twenty to twenty-six times an hour. At first it seemed that the larger and stronger bird was getting all the food, but records showed that during the time of throwing excreta from the nest the young changed positions, and that the adults tried to divide the feedings by placing the grubs first in one mouth, and the next time in another. As the little birds were constantly removing refuse from the nest, the food was fairly well divided.

The birds grew rapidly. On July 19, one of the little ones (64539) was missing. On July 28, near 6 P. M. the others left the nest. The writer was only successful in finding two of these. The male parent took charge of one of them, and the mother took the other. The next three days were spent in teaching the young how to master the art of securing food, and overcoming their fear of the swift current, and in feeding them. They soon learned to travel along the banks and fly short distances. Several times the young birds got into the stream and I was ready to effect a rescue, but they always managed to reach a rock before I could get near them. The parent birds sometimes tried to draw our attention from the young, but usually they paid no attention to our presence.

They continued to encourage and sometimes to feed the young for almost three weeks. When we left the vicinity, about August 25, the adults

were still faithfully overseeing the young.—J. B. RISHEL, *Skinner Jr. High School, Denver, Colo.*

Ruby-crowned Kinglet in Summer in the Adirondack Mts., N. Y.—On June 16, 1922, on the upper slope of Mount Whiteface, just North of Wilmington, New York, at an elevation of about 3900 feet, a Ruby-crowned Kinglet (*Regulus calendula calendula*) was noted in a dense growth of Balsam Fir. The bird was in full song and the lateness of the date suggested the probability that it might be nesting in the vicinity. The nest was not found, however, and only the one bird was observed.—JOSEPH KITTEDGE, JR., *St. Paul, Minn.*

Robin Feeds Young House Finch.—Hills' observation of a Wren feeding Black-headed Grosbeaks in the October number of 'The Auk,' (pages 615-616) reminds me of observations made at my home many years ago, which have not been published. A pair of Robins were nesting on one pillar of our front porch, and a pair of House Finches on another pillar. The Robins were repeatedly observed trying to poke angle-worms down the tiny throats of the young House Finches during the absence of the Finch parents. The difference in feeding habits between the two species naturally made trouble, and when the parent Finches occasionally caught the Robins at the job there was a fine row. The performance was repeated at frequent intervals for several days. The Robins were feeding their own young at the same time, so the explanation offered by Mr. Hills in case of the Wren and Grosbeak would not apply.—JUNIUS HENDERSON, *Boulder, Colorado.*

Michigan Notes.—SPIZELLA PALLIDA. *Clay-colored Sparrow.*—One or two birds were noted on the Higgins Lake State Forest about four miles south of Roscommon on June 26, 29, and July 6, 1924. The male birds were giving their characteristic songs and were in the same location on the Jack pine and scrub oak plains on the three days. Four birds including one young which could not yet fly were noted on the Ogemaw State Forest, five miles northwest of West Branch, on July 11. Two males in song were heard at the same place July 12. One was heard on the Pigeon River State Forest, twelve miles east of Vanderbilt on July 28. Two were noted in the southwest corner of Presque Isle County on July 30, 1924. Four were seen at Vulcan near the Wisconsin boundary on August 11. Apparently the species is much more common, and particularly in the Lower Peninsula than is indicated in Barrows' 'Michigan Bird Life.'

PRAIRIE WARBLER. *Dendroica discolor.*—A lone bird was seen July 3, 1924, at Lovell's in the northeast corner of Crawford County.

UPLAND PLOVER. *Bartramia longicauda.*—One fifteen miles northwest of East Tawas on June 20 and 22, 1924. One just northeast of Grayling, July 3. One at Beaver Lake, July 10, 1924. In each case the birds were in openings on the dry sandy Jack pine plains where they were doubtless breeding.—JOSEPH KITTEDGE JR., *St. Paul, Minn.*

Notes from Luce County, Mich.—**ARCTIC THREE-TOED WOODPECKER** (*Picoides arcticus*).—The observation of an individual of this species on June 24, 1924, about two miles south of McMillan, Michigan, would indicate that it had a nest in the vicinity. Since that date I have seen a single bird of this species on September 11, 15 and 20 and October 19. With the exception of the last observation the bird was always seen in the top of a dead evergreen on the east side of McCormick Lake.

HARRIS'S SPARROW (*Zonotrichia querula*).—On May 21, 1924, I heard an unfamiliar bird song and upon investigation found it to be the song of the Harris's Sparrow. The birds were rather common for about a week, in the yard where the chickens were fed, and also about a box in which I put food for the birds.

TREE SWALLOW (*Iridoprocne bicolor*).—Tree Swallows have nested in my bird houses since the summer of 1919 and I have been interested in noticing the difference in the time of their arrival since they have established a home here. From 1917 to 1919 my first arrival date was May 17, 31 and 15 respectively, while from 1920 to 1924, after they had taken possession of my boxes, the dates ran April 18, 19, 18, 20 and 19.—Dates of departure that I have recorded are July 31, 1922, and August 28, 1924.—O. M. BRYANS, *McMillan, Michigan*.

Further Notes on North Dakota Birds.—**COOPER'S HAWK** (*Accipiter cooperi*).—This species was noted but once by the writer in his North Dakota work. We now have three in the museum collection, taken by H. V. Williams at Grafton. Two adult males were taken April 20 and 24, and an adult female, April 27, 1924.

SHARP-SHINNED HAWK (*Accipiter velox*).—This species is also quite rare in North Dakota. We have received three skins, an adult female taken at Grafton, April 17, 1924, and an adult male and female taken April 20, all by H. V. Williams of Grafton.

PIGEON HAWK (*Falco c. columbarius*).—An adult female was sent to the museum from Grafton, taken October 7, 1923, by H. V. Williams.

RICHARDSON'S PIGEON HAWK (*Falco columbarius richardsonii*).—This species was not found in any of the North Dakota collections by the writer in 1920-21. I can now record the taking of one at Bottineau, at the edge of the Turtle Mountains, on June 24, 1924, by Mr. Eastgate. The specimen is now in the collection of H. V. Williams.

HARLAN'S HAWK (*Buteo borealis harlani*).—Only one specimen was seen by the writer in North Dakota, but H. V. Williams has since secured and sent to the museum five specimens; two adult males and one immature male collected in October, 1923, one adult female collected October 14, 1923, and another collected April 7, 1924. A fine adult female, now in the collection of Walter Koelz of Ann Arbor, was taken at Grafton, October 18, 1923, by Mr. Williams. In comparing these six specimens with a large series of the Western Red Tail, I find the diagnostic characters of this subspecies constant and well marked; and, from recent field notes of col-

lectors in Nebraska and the Dakotas, it would seem to be quite common, at least not very rare.

KRIDER'S HAWK (*Buteo borealis krideri*).—Two males and one female have been received from Mr. Williams. These specimens were taken September 10, October 14, and October 16, 1923.

SWALLOW-TAILED KITE (*Elanoides forficatus*).—In my Preliminary List of Birds of North Dakota I could give no State records for this species, and, as the following records are not available to many, I quote the ones given in the 'Nuttall Bulletin' for 1882, p. 59, by D. H. Talbot of Sioux City, Iowa. "On November 14, 1881, when a short distance west of Jamestown, Dakota Territory, I saw several Swallow-tailed Kites flying around apparently in search of food. On November 17, farther to the west, about midway between Jamestown and Bismark, I saw fifty more of these beautiful birds in a flock."

MAGPIE (*Pica pica hudsonia*).—Coues, 1878, p. 607 says: "No Magpies seen in the Red River region." The ornithologists of North Dakota told me that the species was working east, but I could give only two records for the Red River Valley. Mr. Williams has sent to the museum the skin of an adult female taken in Grafton, October 24, 1923. He also took a female there on February 20, 1922.

OREGON JUNCO (*Junco hyemalis oregonus*).—One taken at Grafton, Walsh County, April 5, 1923, by H. V. Williams and now in the collection of the University of Michigan, constitutes an additional species for the state list.

BUFF-BREASTED SANDPIPER (*Tryngites subruficollis*).—In the museum collection there is a beautiful specimen, taken August 14, 1923, and another, August 26, 1924, at Grafton, North Dakota, by Henry V. Williams.

STILT SANDPIPER (*Micropalama himantopus*).—In my North Dakota list I was not able to give records of this species from eastern North Dakota, but I can now record a good series (20) from Grafton, sent to the museum by H. V. Williams, who collected them there in August, 1923.

KNOT (*Canutus canutus*).—Only two records were known by the writer when the North Dakota list was published. The museum is now in possession of the skins of two males and one female, taken August 18, 25, and 28, 1923, at Grafton, and sent by Mr. Williams.

VIRGINIA RAIL (*Rallus virginianus*).—One mounted bird only was seen by the writer in North Dakota. Mr. Williams has since sent to the museum skins of a male and female, taken at Grafton in May, 1923.—NORMAN A. WOOD, Museum of Zoology, Univ. of Mich., Ann Arbor, Mich.

Notes from Manitoba.—On May 28, 1924, I took a curiously marked male Stilt Sandpiper (*Micropalama himantopus*) at Whitewater Lake Man. This bird was one of a flock of about 150 individuals of the same species. The body was encircled by a broad white band of which the exterior edge formed a ring round the neck. The posterior edge was a line

running through the middle of the scapular region. It will be interesting to know if any observer farther south has noticed this very conspicuous bird.

On June 2, 1924, at the same place I collected a female Cerulean Warbler (*Dendroica cerulea*) which had evidently wandered from its normal range. This is the first record of the species for Manitoba. The bird arrived with a large flight of Warblers of several species including Yellow, Tennessee, Blackpoll, Bay-breasted, Chestnut-sided, Blackburnian and Mourning.

It might also be worth noting that Whistling Swans and Lesser Snow Geese were very abundant at Whitewater Lake this same spring. With X8 glasses I counted 377 Swans at one time within 150 yards of my tent. Blue Geese were noted among the Lesser Snow to the extent of about 4 or 5 per cent of the total. Both Geese and Swans stayed at the lake for about three weeks, during which time several severe snow-storms were experienced. The main body of Geese left on May 15. —E. S. HARROLD, 177 South St., Winnepeg, Man.

Early Shooting and Some Late Breeding Records for Alabama.—

Perhaps, it is but to be expected that short-sighted sportsmen will continue to attack the federal regulations for the protection of migratory game birds and use every effort to get them adjusted to suit their personal desires, regardless of the biological reasons for such regulations. An outstanding case in point is the restriction on Dove shooting, which in the South is a veritable bone of contention.

In Alabama the federal regulations permit the shooting of Doves from October 16 to January 31, whereas under the old State law the season used to open on August 1. This curtailment of the open season has caused much dissatisfaction among local hunters, who claim that Doves can be secured only by shooting them as they come in to water-holes or over baited fields. Naturally, after the fall rains begin, the birds are not dependent upon water-holes and the shooters must exert themselves more, or else run the risk of being caught baiting the birds.

At a so-called "Wild Life Conservation Conference," which met in Montgomery a couple of years ago, I drew upon my poor head a torrent of sarcasm by attempting to explain the reason for the federal regulations and by pleading for their observance. My assailant, a man with the title of judge, then offered a resolution aimed to set in motion machinery to have the Dove season opened on September 1.

It is not reasonable to suppose that in Alabama alone such attempts are being made to obtain earlier opening of the shooting season on various species of game; therefore I wish to show, by just a few instances, how basically sound the federal regulations really are.

BOB-WHITE (*Colinus v. virginianus*).—Unfortunately this prince of game birds is unprotected by federal law and until recently was subjected to an open season beginning November 1. The following records indicate that even such an apparently late opening of the season might work a

hardship on the species. On September 19, 1909, eleven fresh eggs were found near Autaugaville ('The Auk,' 1914, p. 219); again, on September 16, 1923, fourteen eggs were found near Booth. While these records may well be exceptional, it must be remembered that the discovery of the nests was purely accidental as no systematic search is made for birds' nests in the autumn. When due allowance is made for incubation and for the development of the young to a point where they are capable of shifting for themselves, it will be seen that November 1 is none too late to open the shooting season. I am happy to say that recently the Legislature has extended the closed season on Quail to November 20.

MOURNING DOVE (*Zenaidura m. carolinensis*).—My latest record for this bird is furnished by two eggs found near Autaugaville on August 25, 1915. As is well known, young Doves are highly altricial and a long time elapses between hatching and flight. Certainly mid-October is as early as such a brood could be expected to survive orphanism.

While not relating to game birds, the following records may prove sufficiently instructive to warrant their inclusion here.

GROUND DOVE (*Chaemepelia p. passerina*).—August 6, 1923, a nest with two fresh eggs, and on September 22, another nest with two eggs, were found near Booth.

YELLOW-BILLED CUCKOO (*Coccyzus a. americanus*).—Eggs have been found at Booth on August 11, and on August 14, 1923, two eggs were discovered at Barachias. According to Howell ('Birds of Alabama,' 1924, p. 156), McCormack found eggs at Leighton, in the northwest corner of the State, on August 10.

For the Booth and Autaugaville records I am indebted to Mr. Lewis S. Golsan, of Prattville.—ERNEST G. HOLT, 312 Bell Building, Montgomery, Ala.

RECENT LITERATURE.

Cory's 'Birds of the Americas.'—At the time of Mr. Charles B. Cory's death, July 31, 1921, he had completed Part II of the 'Catalogue of Birds of the Americas' and was engaged upon Part III; Part I was to follow later. He never relinquished his ambition to complete this work which he had conceived and so ably begun, and it is a great satisfaction to his many friends that, this being impossible, it is to be completed by one whom we are led to believe he would have selected for the task had he to make the choice. It is through the generosity of Mr. Cory's life-long friend, Mr. Charles R. Crane, that the Field Museum was enabled to secure the services of Dr. C. E. Hellmayr to take up the work where Cory left it. Part III¹ which now appears, covering the

¹Catalogue of Birds of the Americas. By Charles B. Cory. Revised and continued by Charles E. Hellmayr. Part III. Pteroptochidae—Conopophagidae—Formicariidae. Field Museum of Natural History Publication 223. Zool. Series Vol. XIII. November 20, 1924. pp. 1-vii + 1-369, pl. 1.

Tapacolas, Gnat-eaters and Ant-birds (Pterotochidae, Conopophagidae and Formicariidae), was left in an advanced stage of preparation at the time of Cory's death, but the large amount of work done on neotropical birds since that time, together with the notes and information possessed by Mr. Hellmayr and not accessible to Mr. Cory, have necessitated a complete revision of the manuscript, and although conforming to the style and typography of the preceding part, all responsibility for detail and authority for the new forms proposed rests upon Dr. Hellmayr. All of which information we gather from the preface by Dr. W. H. Osgood, Curator of the Department of Zoölogy of the museum. The volume is a most welcome one to all systematic workers on the avifauna of South America as the families of which it treats are among the most difficult to deal with, and such information as we have had regarding the relationship of the species and genera has been widely scattered. Dr. Hellmayr's familiarity with the collections in Europe and his copious notes on specimens contained therein, have been invaluable in making this volume of the 'Catalogue' as nearly perfect as our present knowledge of the subject permits.

Dr. Hellmayr deserves the greatest credit for the care which he has exercised in the preparation of the manuscript, while the numerous extended footnotes over his own initials contain helpful descriptions and information of the greatest importance. The new forms described in this Part are listed on p. vii and comprise *Scytalopus latrans*, four subspecies of *Thamnophilus*, one each of *Melanopareia*, *Sclateria* and *Phaenostictus* and a new genus *Sipia* (p. 224) for *Pyriglena berlepschi* Hartert.

Comparing Dr. Hellmayr's arrangement with that of Mr. Ridgway in Part V of his 'Birds of North and Middle America' we find considerable difference, and a number of the genera proposed or recognized by the latter author are placed in synonymy by Hellmayr as for instance *Abalius*, *Erionotus*, *Myrmopagis*, *Lochites*, *Rhopocharis*, *Rhopias*, *Hypsibemon*, *Oropezus* and *Hylopezus*. Such radical difference of opinion on the part of two of the best authorities is a good illustration of the extent to which generic subdivision is based upon individual opinion, and the useless confusion that is perpetrated in nomenclature by too radical action in the creation of "new genera."

It is to be regretted that Dr. Hellmayr did not explain more fully his reasons for certain nomenclatural rulings, as the apparent refusal to adopt any of Reichenbach's genera, published in his 'Avium Systema Naturale' in connection with plates but without diagnosis. Such names have always been accepted by Mr. Ridgway.

However, this is a small matter as compared with the careful consideration given to ornithological questions. We wish Dr. Hellmayr all speed in the completion of his task.—W. S.

Kirke Swann's 'Monograph of the Birds of Prey.'¹—Having gone

¹ A | Monograph | of the | Birds of Prey | (Order Accipitres) | by | H. Kirke Swann, F.Z.S., M.B.O.U. | Corresponding Fellow of the Amer. Orn. Union.

thoroughly over the systematic study of the birds of prey in preparing the two editions of his 'Synopsis of the Accipitres' Mr. Kirke Swann is now engaged upon an elaborate 'Monograph' of the group, the first part of which is before us.

The work is a handsomely printed quarto, illustrated by colored plates and photogravures, the former from paintings by Grönvold and the latter from photographs. No attempt is made to figure all of the species and in the present part while fifteen species and eleven additional subspecies of Vultures are considered in the text, only the Condor, two forms of Caracaras and two of Griffon Vultures appear on the plates. There is however a plate of eggs of various species and a photographic study of a Griffon Vulture's nest. Grönvold's paintings, while exceedingly accurate in detail, do not have the life and action displayed in the work of some of the other leading bird artists, but those of the present part are among his best and fully meet the needs of the work, while the reproduction is beautifully done.

The text of Part I includes an introduction covering the general characters and arrangement of the Accipitres with a table showing the distribution of the 100 genera in the eight great zoogeographic regions and the number of forms in each. There is also an account of the history of falconry and a list of the species employed in this ancient art, which includes over twenty forms.

The systematic treatment follows, beginning with the Sarcoramphidae or New World Vultures. The synonymy and distributional statements are very complete and the descriptions, covering as they do adults of both sexes and young, are entirely satisfactory. The main text includes condensed accounts of the habits and food of each form with brief quotations from several authors who have studied the species in its native haunts—the whole averaging two pages to each species or subspecies.

The problem of how to treat the several subspecies of a given species has been met by Mr. Swann by printing the first race in large type with a serial number and the others in smaller type designated by letters. This unfortunately will always give the impression of undue importance to the first race and subordinate rank to the others, whereas they are simply several forms of the same species, all being of equal rank. This, however, is a minor point in an admirable work. The nomenclature is fully up to date and we note that on the advice of Dr. Alexander Wetmore, whose aid is acknowledged in several places, the Pondicherry Vulture is accorded generic distinction from the Sociable Vulture, which was not done in the 'Synopsis' nor in the introduction to the present work.

Illustrated by Plates reproduced in colour from drawings made expressly for this work by H. Grönvold, also Coloured Plates of Eggs, and Photogravure Plates. London | Wheldon & Wesley, Ltd. | 2, 3 & 4, Arthur Street, New Oxford Street, W. C. 2 | Part I. November 15th, 1924. Price 26s. net. Pp. i-xi+1-52 and five plates, unnumbered. To be completed in 12 parts. Edition limited to 412 copies and will not be reprinted.

On the whole the 'Monograph' lives well up to its title and gives us in concise form a summary of the present day knowledge of this noble group of birds, which, until Mr. Swann took up the work, was sadly in need of a revision. We congratulate him upon the high standard which he has set both in the character of text and plates and in typographical appearance.

—W. S.

Abel Chapman's 'The Borders and Beyond.'—In this volume¹ Mr. Chapman returns for the most part to his early interests and to the subject of his first book, 'Bird-Life of the Borders,' which, by the way refers to the borderland between England and Scotland, a fact not perhaps generally understood on this side of the Atlantic. Eight chapters deal with "salmonology" and one is devoted to the otter but the bulk of the volume relates to birds, especially to the Red Grouse and the Shore-birds, with other chapters on Water-fowl, the Raven, the sense of smell in birds, modern zoölogy, nomenclature and trinomialism.

Much space is given to demonstrate that the Red Grouse feeds only in the evening, while in connection with the transient shore-birds our author sets down seven salient points which he considers proven by his observations: (1) that in many species some individuals go far south to winter, while others remain in the British Isles, the latter starting north in March and the former in mid-May; (2) that the Black-bellied Plover, Sanderling, Turnstone, Oystercatcher and Bar-tailed Godwit require two, three, possibly four years to acquire their full adult plumage, and during this prolonged adolescence do not breed; (3) that other species attain maturity and breed the first year—Black-tailed Godwit, Golden Plover, Curlew Sandpiper, Little and Temmink's Stints; (4) that the immature birds accompany the adults only so far and no farther in the spring migration, apparently dropping out somewhere between Great Britain and the Arctic Circle; (5) that the successive plumages of the long adolescence have never hitherto been correctly diagnosed; (6) that the scope and range of migration is wider and more complex than popularly accepted and that the routes vary according to age and season; (7) that the calendar of the arctic differs from that of Great Britain by a quarter of the year and this fact should be considered in framing faunal game legislation.

We look in vain for some account of how the age of the birds discussed and figured was determined but find only such statements as: "obviously the display in *mid-May* of every phase of plumage bespeaks in the Sanderling a prolonged maturity;" while the data upon which the author's remarks upon migration are based are equally unsatisfactory. Mr. Chap-

¹The Borders and Beyond. Arctic—Cheviot—Tropic. "Where'er the billows roll, from the world's girdle to the frozen Pole." By Abel Chapman, M. A., author of Bird Life of the Borders, and of Works on Spain, Norway, British East Africa, and the Soudan. With nineteen coloured plates by W. H. Riddell and 170 sketches by the author, maps, diagrams, etc. Gurney and Jackson, London: 33 Paternoster Row, Edinburgh: Tweeddale Court. 1924. pp. i-xxi, 1-489, large 8vo. Price 25 shillings net.

man's accounts of his experiences with the shore-birds and other wild-fowl and his numerous sketches of them are extremely interesting, while his style is pleasing and attractive, and even though we do not agree with all of his theories, we can glean pleasure and profit from a perusal of his observations.

In considering the sense of smell he cites numerous cases of Vultures in Africa devouring the waste portions of carcasses of game left by hunters, but being absolutely unable to detect the store of meat carefully covered with grass and boughs close at hand.

In the chapters on modern zoölogy "the tendency of professional science to neglect the direct study of life in the field" is scored, and the suggestion is made that the term "zoölogy" might well be changed to "dermatology" or "necrology." While we agree with Mr. Chapman in part, we do not think that he realizes the extent to which the study of wild life is carried on today, and we cannot see the justice in criticising those who devote themselves exclusively to the study of skins and anatomical specimens any more than in censuring those who prefer to be exclusively field naturalists. Had he studied plumage variation from skins, and determined the age of specimens by dissection he would have altered his views, we think, on some of the points on which he speaks so positively, as, for instance, the long adolescence of certain Limicolæ.

In considering modern nomenclature and trinomialism we find only destructive criticism with no suggestion as to how to remedy a condition which the author clearly does not understand. The main reason for the chaos and confusion in nomenclature is the carelessness of our predecessors in naming the same species many times, and in preparing inadequate descriptions, and yet we find Mr. Chapman giving a brand new name (*Charadrius calceatus*, p. 126) to the Black-bellied Plover which has enjoyed the unique distinction of having only two specific names in 150 years, both bestowed by Linnaeus, until our author complicates matters by proposing another, simply because he does not like the old ones—and proposing it without adequate diagnosis at that! If every one of us adopted the same plan, nomenclature would indeed be the "comedy of errors" that he calls it.

Field and closet ornithology are two equally important branches of the subject and it is unfortunate to try to mix them or to criticise one from the standpoint of the other. We therefore recommend Mr. Chapman's book as a *field* study most heartily and would not take too seriously his strictures on the professional zoölogists. The color plates by Mr. Riddell and the author's own sketches are excellent.—W. S.

Heinroths' 'Birds of Middle Europe.'—We have received the first part of a work,¹ in German, on the birds of middle Europe by Dr. Oscar

¹ Die Vögel Mitteleuropas herausgegeben von der Staatl-Stelle für Naturdenkmalpflege in Preussen von Dr. Oskar u. Frau Magdalena Heinroth. R. Friedlander & Sohn, Berlin N.W. 6, Karlstr. 11. Subscription price 2.50 Goldmarks for each part. Pp. 1-16, col. pll. I, XXXVII, LXXIV, plain pll. 1, 2, 86, 125, 212.

Heinroth and Frau Magdalena Heinroth. The unique feature of this publication is the wealth of photographic illustration which shows the bird shortly after hatching from the egg and in various stages afterward to maturity. The egg is also figured and diagrams of the coloration of the inside of the mouth of the nestling are added. The colored plates are apparently reproduced from hand colored photographs and are not so pleasing as the uncolored ones. Large numbers of single portraits, sometimes a dozen or more are presented on one quarto plate, which detracts very much from their artistic beauty, though they are just as valuable for study and comparison.

There is in this part a brief introduction on the Passeriformes and then a series of accounts of the birds of the first 'group', "Erdsanger" including the Nightingale, Robin, Blue-throat and Wheat-ear. The text includes measurements of birds and eggs, with an account of the distribution and life history of each species. The plates in Part I, which are loose, include some of Owls and Plover and other species not mentioned in the text, and apparently no attempt is made to have plates and text in each installment correspond. The completed work is to form two volumes with 125 colored plates and 275 in uncolored halftone, and will be issued in 35 parts.

It should be an invaluable work of reference to students living in the region of which it treats and to others as well, especially those interested in successive plumage development.—W. S.

Recent Publications of the U. S. Biological Survey.—Besides the annual synopsis of the game laws¹ and the directory of officials and organizations² concerned with game and bird protection, the U. S. Biological Survey has recently issued two important papers.

One of these by Ira N. Gabrielson deals with the food habits of some winter bird visitors.³ These comprise the Evening and Pine Grosbeaks, the Crossbills, Redpolls, Siskin, Snow Bunting, Longspurs and Pipits. The conclusions of the author amply confirm our present attitude of protection to all of these species. Most of them do not figure prominently as either beneficial or injurious birds, their food being for the most part of little or no economic importance but they should be rigidly protected on account of their beauty and attractiveness as in the case of all wild life not directly injurious.

The other publication⁴ is by Mr. F. C. Lincoln and is entitled 'Returns from Banded Birds 1920-1923.' It includes tabulated records of 1746

¹ Game Laws for the Season 1924-25, Farmers' Bulletin No. 1444. U. S. Dept. Agriculture, August 1924. By Geo. A. Lawyer, pp. 1-38. Price 5 cents.

² Directory of Officials and Organizations Concerned with the Protection of Birds and Game: 1924. By Geo. A. Lawyer and Talbot Denmead. October, 1924. pp. 1-16.

³ Food Habits of Some Winter Bird Visitors. By Ira N. Gabrielson. Department Bulletin No. 1249. October 27, 1924. pp. 1-32. U. S. Dept. Agriculture.

⁴ Returns from Banded Birds, 1920 to 1923. By Frederick C. Lincoln. Department Bulletin, U. S. Dept. Agriculture No. 1268. October 15, 1924. pp. 1-56. Price 10 cents.

returns reported to the Survey which have to do with 103 species. The great bulk of these are from Ducks, notably the Mallard and Black Duck, but some of those relating to other species are the most interesting, as for instance, a Common Tern banded on the coast of Maine and recovered in South Nigeria, West Africa, and another of the same species banded at Brigantine, N. J. and recovered in Trinidad.

This sort of publication is most important and most practical and this is in our opinion the right way to publish banding records. The long lists of birds banded and the recovery records, scattered through various publications, do little good, as it takes too much time to look them up and correlate them. Published in this way by the Biological Survey all records are brought together in convenient form and can readily be studied and compared.

The large number of banded birds found dead at or near the banding stations demands most careful investigation in connection with the communication under "Correspondence" in the present issue of 'The Auk.' Any real menace to bird life that may be positively proven to result directly or indirectly from banding must be promptly eliminated. The birds are too valuable to be uselessly destroyed and the method of study too important to be abandoned or to have any serious criticism placed upon it.—W. S.

Chapin on the Weaver-Finches of the Genus *Pyrenestes*.—Mr. Chapin's latest contribution to African ornithology¹ is a study of the genus *Pyrenestes*, a group of Weaver-Finches which exhibits a variation in the size of the beak comparable to that of the Galapagos Finches (*Geospiza*). This variation has not been well understood nor has the coloration of the sexes been satisfactorily worked out. Mr. Chapin's paper is a philosophical discussion of the distribution of the species and races and their relationship to one another, to forest areas, rainfall and food. His conclusions are that there are three species clearly distinguished by their coloration: (1) a species with black and red males, ranging from the Gold Coast to Uganda; (2) one with brown and red males, occurring from Senegal to Liberia; and (3) a similar species but with the red not extending to the hind crown. Each of these species is divisible into races varying in size and in proportions of the beak, which variation is roughly correlated with changes in vegetation and rainfall, the greater size of the beak being apparently coincident with a diet of hard coated seeds of the Razor-grass (*Scleria*).

A key to the forms, tables of measurements, with maps and diagnoses, add further to the value of this interesting paper.—W. S.

Riley on Celebes Birds.—This paper,² by Mr. J. H. Riley of the

¹ Size Variation in *Pyrenestes*, a Genus of Weaver-Finches. By James P. Chapin, Bull. American Museum, Nat. Hist. Vol. XLIX, Art. IV, pp. 415-441. September 3, 1924.

² We regret that the National Museum has not yet been able to return to the practise of dating their papers as was the custom prior to the war. A collection of Birds from North and North-central Celebes. By J. H. Riley, Proc. U. S. Nat. Museum. Vol. 64, Art. 16, pp. 1-118. 1924.

U. S. National Museum, is a report on the collections of birds made for the museum by Mr. H. C. Raven, mainly in 1916, while carrying on explorations under the patronage of Dr. W. L. Abbott, who in 1912 was compelled to abandon his personal researches in the far East on account of ill health.

The report covers 202 species and contains lists of specimens with full data, discussions of relationships and plumages and some brief field notes by Mr. Raven. Mr. Riley has from time to time been describing the new forms contained in the collections which number eighteen, two of them, constituting new genera—*Coracornis* and *Celebesia*, while two others belong to genera not hitherto found in Celebes. Two species already known from elsewhere were also added to the Celebesian fauna. The large number of novelties illustrates the thoroughness of Mr. Raven's work, while the care that Mr. Riley has taken with the preparation of the paper makes it one of the most important contributions to the ornithology of the island.

Mr. Riley has also published, recently, a description¹ of a new Babbler from Koh Chang island, Siam, obtained by Dr. Hugh M. Smith while visiting that country. He has named it *Pellorneum smithi* (p. 129).—W. S.

Chapman on New Neotropical Birds.—In two papers, which have appeared since our last issue, Dr. Chapman continues to describe new birds obtained on the various South American expeditions of the American Museum of Natural History.

In the first of these,² eighteen forms are described belonging to the genera: *Tyranniscus*, *Myiozetetes*, *Myiobius*, *Myiochanes*, *Machaeropterus*, *Chloropipo*, *Piprites*, *Manacus*, *Heliochera*, *Neochelidon*, *Petrochelidon*, *Pheugopedius*, *Catharus* and *Cichlopsis*.

His consideration of the genus *Neochelidon* is particularly interesting, as it shows that in spite of the discovery of several new forms of this Swallow no specimen yet obtained can be referred to the true *N. tibialis* of Cassin, the type of which therefore remains unique with its locality still unknown.

Dr. Chapman's second paper³ contains descriptions of twelve new forms of *Pachysylvia*, *Cyclarhis*, *Compsothlypis*, *Basileuterus*, *Catamenia*, *Volatina*, *Sicalis* and *Mimus*. A review of the *Sicalis arvensis* group is also included, and a synopsis of the *Basileuterus tristriatus* group, with the usual full lists of specimens examined and helpful measurements of all allied forms.

The titles of Dr. Chapman's numerous papers dealing with new South American birds are so similar that it will be confusing to refer to them in future and it seems unfortunate that they could not have been numbered

¹ A New Spotted Babbler from Siam. By J. H. Riley. Proc. Biol. Soc. Wash. Vol. 37, pp. 129-130, October 21, 1924.

² Descriptions of New Birds from Ecuador, Colombia, Peru, and Bolivia. By Frank M. Chapman. Amer. Museum Novitates. No. 138. October 18, 1924. pp. 1-16.

³ Descriptions of New Birds from Colombia, Ecuador, Peru and Bolivia. By Frank M. Chapman. Amer. Museum Novitates. No. 143. November 6, 1924.

consecutively under a uniform title. The number of the 'Novitates' will answer the same purpose, of course, if it is always quoted.—W. S.

Hellmayr on the Birds of "Silla de Caracas."—This paper¹ deals with the birds of a section of the coastal mountains of northern Venezuela supplementing a contribution by Hellmayr and Seilern, published in 1912, on the avifauna of the "Cumbre de Valencia" which lies a little to the westward. The principal basis of the present report is the extensive collection made by S. M. Klages, who also procured the material for the former study.

This paper is entirely technical in character, consisting of an annotated list of species with a catalogue of the specimens, discussions of their plumages and relationships, and in many cases a synopsis of all of the forms belonging to the group under consideration. The new forms seem all to have been described in previous papers in other periodicals. The author apparently did not have an opportunity to see the proof sheets as the text abounds in typographical errors which have been largely corrected, in manuscript, in the copy sent for review. This important paper forms the second of a series entitled "Beitrage zur Ornithologie von Venezuela" and the present installment covers only the families Turdidae to Tanagridae, in essentially the order of the A. O. U. 'Check-List.'—W. S.

Recent Papers by Griscom and Dwight.—A recent paper² by Mr. Ludlow Griscom describes sixteen new birds obtained by the author and his associates on an expedition to western Panama undertaken under the auspices of the American Museum of Natural History during the spring of 1924, and a few from Costa Rica, which a study of the Panama series showed to be undescribed.

The new forms belong to the genera, *Trogonurus*, *Aulacorhynchus*, *Scytalopus*, *Margarornis*, *Pseudocolaptes*, *Atalotriccus*, *Troglodytes*, *Catharus*, *Planesticus*, *Phainoptila*, *Emberizoides*, *Atlapetes*, *Pselliophorus*, and *Chlorospingus*.

In another paper³ Mr. Griscom gives an account of the expedition upon which this material was obtained, illustrated by excellent halftones from photographs of the country. His associates were Messrs. Rudyerd Boulton, George A. Seaman, J. Manson Valentine and R. R. Benson. The reports throw much light on the avifauna of a hitherto unexplored mountain region lying between Volcan de Chiriqui and the Pico Calovevora.

A paper⁴ on new birds from Costa Rica by Dr. Jonathan Dwight and

¹ Beitrage zur Ornithologie von Venezuela, Von C. E. Hellmayr II. Die Vögel der Silla der Caracas. Arch. für Naturg. 90 Jahrgang, May, 1924, Abt. 1, Heft. 2. pp. 132-204.

² Descriptions of New Birds from Panama and Costa Rica. By Ludlow Griscom, Amer. Museum Novitates, No. 141. October 31, 1924. pp. 1-12.

³ Bird Hunting Among the Wild Indians of Western Panama. By Ludlow Griscom. Natural History, Vol. XXIV, No. 4, 1924, pp. 509-519.

⁴ Descriptions of New Birds from Costa Rica. By Jonathan Dwight and Ludlow Griscom. Amer. Museum Novitates, No. 142, November 3, 1924, pp. 1-5.

Mr. Griscom is based on the collections made for Dr. Dwight by Mr. Austin Paul Smith which were also used by Mr. Griscom in his Panama studies. Four species and subspecies are here named belonging to the genera, *Crypturus*, *Micromonicha*, *Myiochanes* and *Phoenicotheraupis*.—W. S.

Pearson's 'Hérons of the United States.'—Under the above title¹ Dr. T. Gilbert Pearson, president of the National Association of Audubon Societies, has prepared a Bulletin of the Society dealing with all of the species of Herons found in our country.

Dr. Pearson's pamphlet gives one an excellent outline of the life history of each of the species, and of the distribution and plumages of these interesting birds, which have unwittingly, and to their sorrow, played such a prominent part in the campaign for bird protection. Even yet the insistent demand of fashion for egret plumes makes the task of the wardens not only difficult but perilous and the saving from extinction of some of the rarest species is by no means an assured thing.

Many persons desire to know more about these persecuted birds and this publication will meet their needs admirably. Four colored plates from paintings by Louis Aggasiz Fuertes add to the value and interest of the pamphlet. Some if not all of these have already appeared in the Audubon Department of 'Bird-Lore' as has much of the text although for the present purposes it has been amplified and brought up to date.—W. S.

Grinnell's 'Bibliography of California Ornithology.'—Dr. Grinnell has in this publication², taken up the bibliography of Californian ornithology at the point at which he left it in his previous volume—January, 1908—and carried it on to the end of 1923. Besides listing all of the titles for the included years he has added 133 which were overlooked in preparing the first installment, so that the grand total now reaches 4071.

The scrupulous care that has been exercised in the compilation has resulted in the most accurate and complete bibliography that has yet appeared for any State in the Union, and those who contemplate the making of a bibliography may well follow Dr. Grinnell's model. This class of work is one that, if worth doing, is worth doing well, for any error in a bibliography, like one in a dictionary, is likely to be copied over and over again, for years to come, by those who have not the opportunity or inclination for personal verification. We congratulate Dr. Grinnell upon a difficult and thankless task well done.—W. S.

¹ Herons of the United States. Bulletin No. 5. By T. Gilbert Pearson, LL.D. National Association of Audubon Societies, 1974 Broadway, New York. 1924—pp. 1-38. Price 50 cents.

² Bibliography of California Ornithology, Second Installment to end of 1923. By Joseph Grinnell. Contribution No. 421 from the Museum of Vertebrate Zoölogy of the University of California. Cooper Ornithological Club, Pacific Coast Avifauna Number 16. Berkeley, California. Published by the Club, September 15, 1924, pp. 1-191 (W. Lee Chambers, Eagle Rock, Los Angeles Co., California. Price \$6.00).

Mathews' 'The Birds of Australia.'¹—Part Eight² of Volume eleven continues with the Honey-eaters of the old genus *Ptilotis* which has been subdivided by the author into many groups. "Corrections" and "additions" to the earlier parts of the volume are interjected here and there in the text in a most confusing manner. Why these could not have been reserved for an appendix it is hard to understand, and the method impresses one with the idea that, as the work grows to a close, less attention is given to editorial detail. We note no new names proposed in this part. Apparently about seventy species remain to be treated which we suppose will be covered in one more volume.

Since our last notice we have also received the final part of the quarto 'Check-List' which accompanies the large work as a uniform "Supplement III". This, besides completing the list of Australian birds on the plan adopted in the preceding parts, includes corrections and a series of miscellaneous notes, the application of some of which it is difficult to understand, especially the statement that "as in all my works the designation of type of genera and the type locality of species and subspecies can be accepted when correct."

One item that Mr. Mathews might well add before his work closes would be a statement as to the individuals after whom many of his new subspecies are named. In many cases one can guess, but there are others where the name is ambiguous and may have been given for one of several persons since usually no clue is given in the original place of publication.

The 'Birds of Australia' is making good progress and we hope soon to be able to announce its completion—W. S.

Life and Bibliography of Salvadori.—Count E. Arrigoni Degli Oddi has prepared an excellent bibliography³ of the publications of the late Tommaso Salvadori which is accompanied by a brief biographical sketch. No less than 338 titles are listed together with a list of 490 species and 27 genera described by Salvadori and 24 species and one genus named in his honor.

We are indebted to Count Arrigoni for this excellent resume of the work of one of the most indefatigable of the European ornithologists of the past generation, and one who throughout his life was a leader in the advancement of ornithological knowledge—W. S.

Murphy on the Cormorants of Peru.—Those familiar with Dr. Murphy's entertaining lectures on the Peruvian Coast will be pleased to find in this well illustrated paper⁴ the best of his photographs of the birds

¹ The Birds of Australia. By Gregory M. Mathews. Volume XI, Part 8. October 25, 1924.

² Supplement No. 3. Check List of the Birds of Australia, Part 3. Order Passeriformes (Concluding Part) September 8, 1924. London, H. F. and G. Witherby, 326 High Holburn, W. 1. C.

³ Cenni sulla Vita e sulle Opere di Tommaso Salvadori. Messina. (1924) estratto dalla 'Revista Italiana Ornithologia' VI, pp. 65-105, repaged 1-51.

⁴ The Most Valuable Bird in the World. The National Geographic Magazine, September 1924, pp. 278-302.

of the Guano islands and will read with interest his accounts of the Cormorants or Guanays and the peculiar industry which their rookeries make possible on these barren islands. Taken in conjunction Dr. R. E. Coker's article in the 'National Geographic Magazine' for January, 1920, it completes an exhaustive monograph on the life history of this interesting bird, which Dr. Murphy regards as the "most valuable bird in the world," and the famous guano industry of Peru.—W. S.

The Nuttall Club's Anniversary Publication.—The proceedings of the fiftieth anniversary meeting of the Nuttall Ornithological Club which occurred on December 7, 1923, have been published for distribution among the members of the Club in a beautifully printed brochure of 27 pages. It contains the list of members present at the afternoon meeting at Mr. Charles F. Batchelder's residence at Cambridge, along with the remarks of the president of the Club, Dr. Glover M. Allen, in opening the meeting and an address delivered by Dr. Witmer Stone.

In conclusion there is an abstract of the informal addresses made at the dinner held in the evening at the Tavern Club in Boston.

The volume makes a fitting memorial of half a century of notable ornithological activity.—W. S.

Note on the Crested Mynah.—Dr. Casey A. Wood's account¹ of "The Starling Family at Home and Abroad" embodies the prevailing pessimistic view of the economic relations of these birds. A ray of sunshine upon the generally gloomy situation should therefore be not unwelcome.

It is furnished by Faustino Q. Otones, a graduate of the University of Illinois, now doing entomological work in his native Philippines, who shows that the Crested Mynah (*Aethiospar cristatellus*), now established in British Columbia, and the cause of forebodings to many, not only has its good points but is not at all beyond control.

Mr. Otones, bespeaking the general protection of birds, says that "there is in the Philippines much indiscriminate shooting and trapping of birds and likewise stealing of birds' eggs and young from their nests, in ignorance and thoughtlessness of the role that certain birds play in helping us mitigate the ravages of insects and other pests. Birds, well known for their insectivorous habits, like the "martinez" (*Aethiospar cristatellus* Linn.), which used to be a common sight in many places in the Philippines, have become scarce in those places, partly because they have been reduced in numbers or have been scared from those places, or both, by shooting and trapping. Boys are especially guilty in this respect. Laws against the shooting and catching and caging of birds should be strictly enforced. The necessity of preserving our bird life and our game life in general should be impressed upon the minds of the people, especially in those of boys and girls. Many species of wild life in the Philippines are threatened of extinction as a result of indiscriminate shooting and hunting. This can

¹The Condor, Vol. 26, No. 4, July 1924, pp. 123-136.

only be averted by strict law enforcement and widespread education, especially among the youth."¹

Thus it would seem that if we wish to get rid of the Crested Starling we should be able to do as well along that line as the Philippine boys and girls.—W. L. M.

Introduction upon Introduction.—Despite the risks involved, mankind persists in introducing plants and animals into new environments. The urge toward this policy no doubt arises in part from the great success that has attended the spread of man's indispensable satellites among cultivated plants and domesticated animals. Some unfortunate upsets in biotic relations have resulted from introductions even in the case of organisms generally dependent upon man for existence, but when we consider animals and plants not strictly domesticated, successful introductions have almost invariably had regrettable consequences. In numerous cases of this kind importation of enemies of the new pests has been resorted to in an effort to control them. Thus the process of introduction goes pyramiding with no man able to foretell the eventual results.

A recent paper on "The Introduction into Hawaii of Insects that Attack Lantana"² exemplifies this process in its most dangerous form—the introduction of vegetarian insects. The ornithological interest in the case is that the excessive spread of the Lantana plant in Hawaii which stimulated these introductions is attributed to dissemination of the pest by the Chinese Turtle Dove (*Turtur chinensis*) and the Indian Mynah (*Acridotheres tristis*). Observe that both of these are introduced birds, and that the Lantana plant is introduced, in fact that the root of the whole troublesome situation is ill-considered introductions.

The great spread of the Lantana plant followed primarily upon the introduction of the Turtle Dove, a bird said to be "without economic value, or rather, even if the Lantana question is left out, injurious to some extent." The Mynah "being also a voracious feeder on the berries aided the Doves in spreading the seeds far and wide." However, the Mynah was imported to control depredations of the grass army worm (*Spodoptera mauritia*) upon sugar cane and "certainly proved highly efficient in reducing these attacks." A good supply of the Lantana berries as well as of the army worms seem necessary to maintain an abundance of Mynahs, for when the crop of berries had almost entirely failed, owing to the insects imported for the purpose, the numbers of Mynahs in some areas were very greatly reduced and simultaneously there was some recurrence of outbreaks of the army worms.

One could scarcely ask for a more vivid illustration of the strict interdependencies of organisms. Man may feel competent to readjust them to his own benefit, but how often his touch upon the delicate web of biotic relationships changes it in a twinkling to a tangled skein.—W. L. M.

¹ Philippine Agr. Rev., 17, No. 2, 1924, p. 117.

² Perkins, R. C. L., and Swezey, O. H., Bul. Exp. Sta. Haw. Sugar Planters' Assoc., Ent. Ser. 16, Sept. 1924, 83 pp.

The Ornithological Journals.

Bird-Lore. XXVI, No. 5. September-October, 1924.

The Loon on Lake Umbagog. By William Brewster.—Reprinted from 'The Birds of the Lake Umbagog Region of Maine.'

The Eastern and Western Meadowlarks. By Craig S. Thoms.

Pegleg and his Friends. By John B. May.—Account of the Brown Thrasher at Thomasville, Ga., which has been repeatedly captured by Mr. Baldwin and his assistants since 1920.

The Increase of the Starling. By W. J. Cartwright.—A summary of the increase and spread of this introduced species as shown by the 'Bird-Lore' Christmas censuses. It is unfortunate that the compiler limited his researches to a single source of information, for, had he taken the trouble to look up the records in 'The Auk' or consulted the well known reports on the Starling by Forbush (Circular 45, Mass. Dept. of Agr.) and by Kalmbach and Gabrielson (Bull. 868 U. S. Dept. Agr.), he would have found records that would have materially altered his statements and would have prevented readers of 'Bird-Lore' from gaining incorrect ideas of the dates of spread of the species. Instead of reaching Pennsylvania, as he says, in 1912, it was already established there in 1904 and had reached Delaware by 1903.

In the Audubon department there is a beautifully illustrated article by Dr. Arthur A. Allen on 'Birds of an Old Orchard' while the educational leaflet by Dr. Pearson deals with the Crested Flycatcher, with a color plate by Brooks, which is rather unfortunate as he has entirely failed to catch the characteristic pose of the species, and without the colors one would have difficulty in determining what bird it was.

The Condor. XXVI, No. 5. September-October, 1924.

Anomalies in the Distribution of Fossil Gulls. By Loye Miller.—Gulls were abundant in the Pleistocene, in interior Oregon, and one would expect them to occur in the McKittrick and Rancho La Brea deposits, but among the hundreds of thousands of bird remains from these beds not a Gull has been found.

Notes on the Flight Performance of the Wilson Snipe. By Ralph Hoffmann.—Noise unquestionably made by the air passing between the tail feathers as correctly described by Dawson and by Kitchen. The writer noted the spreading of the tail on the downward dip, the length of the note being coincident with the time the tail was expanded.

A Warbler for Nihoa. By Alexander Wetmore.—*Conopoderus kingi* (p. 177) new species.

Branta diekeyi from the McKittrick Pleistocene. By Loye Miller.—A new species of gigantic Goose with a tibio-tarsus equal in size to that of the Whistling Swan.

Notes on Some Birds from Tillamook County, Oregon. By Alex. Walker

Fall Migration Notes from the San Francisco Mountain Region, Arizona
By Harry S. Swarth.

In the 'Notes' Alfred M. Bailey records four birds new to North America, obtained on the Colorado Museum expedition to Alaska, viz: *Dafila acuta acuta*, *Nettion formosum*, *Pisobia ruficollis*, and *Calidris tenuirostris* as identified by Dr. Oberholser.

The Wilson Bulletin. XXXVI, No. 3. September, 1924.

A "Territory" Note on the Belted Kingfisher. By F. C. Lincoln.

Roosting Habits of Gulls. By W. I. Lyon.

A Haunt of the Great Horned Owl. By F. N. Shankland.

The Philosophy of Birds' Nests. By F. L. Burns.

Migration Notes from State College, Center Co., Penna. By Thos. D. Burleigh.

Water Birds Breeding on Pierce Pond, Me. By Allen H. Wood, Jr.

The Oölogist. XLI, No. 8. August, 1924.

Birds of a City Lot [in Sioux City, South Dakota]. By Blanch M. Getty.
—In this paper a number of species are recorded which have never been found in South Dakota, such as Bachman's, Cerulean, Canada and Pine Warblers. Why the editor allows such records to be published, when he constantly criticises the carelessness of newspaper editors who publish inaccurate bird notes, it is hard to understand.

The Oölogist. XLI, No. 11.

Summer Residents of Eastern Maine. By James Bond.

The Ibis. (11 series) VI, No. 4. October, 1924.

Notes on a Small Collection of Birds made in Iraq in the Winter of 1922-23. By Col. R. Meinertzhagen.—Contains a key to the races of *Sturnus vulgaris*.

A Contribution towards the Birds of the Aden Protectorate. By Col. R. Meinertzhagen.—Contains an extended account of the plumages of *Larus hemprichii*.

Birds at Egyptian Lighthouses. By Col. R. Meinertzhagen.

Some Observations on *Pyrrhuloxia grisea*. By S. C. Law.

The Birds of North and Central Darfur with Notes on the West-Central Kordofan and North Nuba Provinces of British Sudan. By Hubert Lynes. Part II.—Contains an interesting discussion on the plumages of several Weaver Finches (*Pyromelana*, *Coliostruthus* and *Ploceus*) of which roving flocks, in worn plumage of the first year, swarm about the nesting places where full-plumaged birds are breeding. The author concludes that they do not breed until their second year and do not acquire the full plumage until then.

Notes on the Birds of the Grahamstown District, Cape Province, South Africa. By A. H. Paget-Wilkes.

Notes on Nyasaland Birds and their Nests and Eggs. By C. Clifton Roberts.

Notes on Some Birds from Egypt. By M. U. Machisuka.

British Birds. XVIII, No. 3. August, 1924.

The Distribution of Black Grouse in Great Britain. By Hugh S. Gladstone.

Courting Display of the Golden-eye on Salt Water. By Henry Boase.

British Birds. XVIII, No. 4. September, 1924.

A Note on the Nesting of the Red Crested Pochard in the Camargue. By W. E. Glegg.

A Study of the Robin by Means of Marked Birds. By J. P. Burkitt.

British Birds. XVIII, No. 5. October, 1924.

Field Notes on the Magpie as Observed in Cumberland. By R. H. Brown.

Some Further Notes on the Courtship Behaviour of the Great Crested Grebe. By Julian S. Huxley.

On the Scientific Names of the Light- and Dark-breasted Brent Geese. By E. Lönnberg.—Decides that the name *Anas Hrota* of Müller is available for the light-breasted form known as *collaris* Brehm.

British Birds. XVIII. No. 6. November, 1924.

On the Nesting of the Flamingo in the Camargue. By W. E. Glegg. Some Points in the Breeding Behaviour of the Common Heron. By J. S. Huxley.

Field Notes from West Cornwall. By G. H. Harvey.

Bulletin of the British Ornithologists' Club. CCXC. October 29, 1924.

Mr. Selater presents a review of the races of *Onychognathus morio*.

Lord Rothschild and Dr. Hartert describe *Domicella albidinucha* (p. 7) and *Philemon eichorni* (p. 8) from New Ireland.

Mr. N. B. Kinnear proposes five new Indian birds. Mr. Stuart Baker describes *Psaroglossa spiloptera assamensis* (p. 14) from Khasia Hills; Mr. H. Whistler, *Cephalopyrus flammiceps saturatus* (p. 15) from Native Sikkim; Mr. N. Kuroda, *Lagopus mutus kurilensis* (p. 15) Paramushir Isl., Kuriles; *Passer rutilans kikuchii* (p. 16) Formosa, and *Certhia familiaris ernsti* (p. 17) Hokkaido; Mr. Mathews *Phonygammus yorki* (p. 17) Cape York, Australia and Dr. Ticehurst and Major R. E. Cheesman three new races from central Arabia.

We note that Mr. H. F. Witherby has been elected Chairman of the Club.

The Avicultural Magazine. (Fourth series) II, No. 7. July, 1924—No. 10, October 1, 1924.

The "special articles" are Finches by A. G. Butler (July); Larks by A. G. Butler (August); Grassfinches by A. Decoux and Thrushes by H. Astley (September); Warblers, Robins etc. by H. Astley (October).

Pesquet's Parrot (*Dasyptilus pequeti*). By M. Dalton-Burgess.—Fed mainly on bread and milk and would not touch seeds though it did eat fruit. It never took up food in its feet as most Parrots do.

There are accounts of the breeding of many species in captivity and several excellent colored plates of species described in the special articles.

A bibliography of avicultural articles in 'The Ibis' for the past twenty years runs through these numbers.

The Oölogists' Record. IV No. 3. September, 1924.

A Collecting Trip in Hungary, 1924. By W. Maitland Congreve.—An annotated list.

Suggestions for the Better Protection of British Birds. By Lewis R. W. Loyd.—This is a carefully prepared suggestion for revision of the laws governing bird protection, quite in contrast to the author's recent little book on the subject. It would seem regrettable that a little more moderation had not been practised in this latter publication as its tone tends to drive farther asunder the two elements, both of which are apparently working for the same end, although one side is overinfluenced by sentiment and the other by the desire to remove limitations as far as possible from the collecting of eggs.

The Emu. XXIV, Part 2. October, 1924.

A Contribution on the Life History of the Australian Pratincole. By W. MacGillivray.

Observations on the Mutton-birds of Phillip Island, Victoria. By F. Lewis.—The Short-tailed Petrel (*Puffinus tenuirostris*).

A Spring Excursion into South-western Queensland. By W. M. MacGillivray.

The Avifauna Around Tumbarumba, N. S. W. By E. C. Chisholm.

Birds of the Stepps. By A. J. Fletcher.

Some Jervis Bay Birds. By H. Wolstenholme.

Birds of the Tararuas. By A. S. Wilkinson.

Notes on a Visit to the Greater Actaeon Island, South Tasmania. By W. W. Giblin.

Notes on a Trip to Upper Colo, N. S. W. By J. R. Kinghorn.

A Quaint Bird of New Zealand—The Kakapo. By Alec. F. O'Donoghue.—The Owl Parrot (*Stringops*).

South Australian Ornithologist. VII, Part 7. July, 1924.

Type Designation. By G. M. Mathews.—This and another paper on nomenclature by the same set forth briefly the salient principles of modern nomenclature.

Some Birds Seen on a Holiday Trip in South-west Queensland. By A. Chenery.

Revue Francaise d'Ornithologie. No. 184-185, August-September, 1924. [In French.]

Some Ideas on the Introduction of an International System of Ornithological Notation. By U. A. Corti.—Symbols to represent time of occurrence, etc.

Ornithological Expeditions to the Region North of the Sahara. By H. deBalsac.

Revue Francaise d'Ornithologie. No. 186. October, 1924. [In French.]

Notes on Certain Species of Birds and Eggs Collected in Tunis in 1923-1924. By A. Vaucher.

Recovery of Ringed Birds. By C. Guerin.

To What Shall We Attribute the Decrease in Birds? By P. Ferrouillat.

On the Migration of European Birds in Africa. By Dr. Gromier.

Transport of the Young by the Black Tern. By C. Guerin.

L'Oiseau. V, No. 5. May, 1924. [In French.]

The same articles which appear in the 'Avicultural Magazine' on various families of birds most interesting to aviculturists run through the numbers of this journal.

Other articles are: The Mountain Pigeon (*Geotrygon montana*). By A. Decoux.

Some Birds of Abyssinia. By J. Delacour.

L'Oiseau. V, No. 7. July, 1924. [In French.]

Remarks on the Evolution of Cuckoo Eggs. By J. Berlioz.

The Rock Thrush. By H. Darviot.

The Trumpeter Cranes. By J. Delacour.

L'Oiseau. V, No. 8. August, 1924. [In French.]

In Indochina. By J. Delacour.

Breeding of Scops in Captivity. By C. Arnault.—With photographic illustrations.

Pigeons of Chile. By A. Fellay.

Le Gerfaut. 14, Fasc. 3, 1924. [In French.]

Ornithological Observations made from May, 1923 to April, 1924, compiled by Chev. G. van Havre.

On the Occurrence of *Turdus minor* in Belgium. By C. Dupond.—A long discussion of the occurrence of American Thrushes in Europe.

Ardea. XIII, Afl. 2. October, 1924. [In Dutch.]

Notes on North American Birds. By F. E. Blaauw.

Ornithological Observations in Scotland and on the Faroe Islands. By G. J. van Oordt.—With a number of illustrations from photographs and an annotated list of the species in English.

Ornithological Observations in Corsica. By H. A. P. C. Oomen.—With several views of the country and an annotated list of the birds.

Some Observations on the Breeding of *Charadrius dubius curonicus* in Holland. By J. H. Pellinkhof.—With excellent photographs of eggs and young.

Many local notes.

Proceedings of the Netherlands Ornithological Club. 14, Afl. 2, 1924. [In Dutch.]

Occurrence of the Baikal Teal in Holland. By C. Eykman.
Observations on the French Riviera. By Snouckaert.

Der Ornithologische Beobachter. XXI, Heft. 10. July, 1924. [In German.]

On the Barn Owl. By A. Schifferli.—With photographic illustrations.
The Appearance of Flamingos in Switzerland. By A. Hesse.

Der Ornithologische Beobachter. XXII, Heft. 1. October, 1924. [In German.]

On *Pratincola rubetra*. By H. Noll-Tobler.—With a colored plate and photographs of the nest and young.

Journal für Ornithologie. 72, Heft. 4. October, 1924. [In German.]

On the Origin of Mimicry in the Eggs of Cuckoos. By B. Rensch.

On Sexual Ethology in the Mallard. By G. von Schweppenbourg.

A Return to the Question of the Migration Routes of Birds. By F. von Lucanus.

A Contribution to Our Knowledge of the Birds of the Grasslands of New Cameroon. By H. Grote.

The Results of My Two Expeditions to Mallorca. Part III. By A. von Jordans.

The Systematic Status of *Ploceus brachypterus* Sw. By E. Stresemann and R. Neunzig.

The Formenkreis *Pachycephala rufiventris*. By E. Stresemann.

Mutation Studies. By E. Stresemann.—*Accipiter ventralis*, *Oenanthe monticola* and *Poephila mirabilis*.

Ornithological Work in Ukrania during the Last Year. By N. Scharleman.

Journal für Ornithologie. 72, Sonderheft. September 1, 1924. [In German.]—This consists of the conclusion of a lengthy paper by

Alexander Koenig on 'The Songbirds of Egypt,' running from the genus *Phylloscopus* through the Warblers, Thrushes, Pipits and Larks. There are two plates illustrating *Motacilla vidua* and *Budytes pygmaea*.

Ornithologische Monatsberichte. 32, No. 5. September–October, 1924. [In German.]

Several records of local occurrences and a Mutation Study of *Perdix montana* by E. Stresemann.

Ornithologische Monatsberichte. 32, No. 6. November–December, 1924. [In German.]

On Mixed Song in *Certhia*. By B. Hoffmann.

The African *Circaetus* Species. By E. Stresemann.

The Genus *Acrocephalus* in the Indo-Australian Archipelago. By E. Stresemann.

On the Importation of Ringed Pheasants. By E. Stresemann.

In the shorter notes there is described *Lamprocolius chloropterus elisabeth* (p. 173) by E. Stresemann from Msamvialager, South Ufipa, Central Africa.

Proceedings Bavarian Ornithological Society. XV, Heft 3. April 15, 1923. [In German.]

Nesting-time in the Giants' Mountains [Silicia]. By H. Mayhoff.

The Oystercatcher in the Midland [of Germany]. By A. Laubmann.

Account of My Observations between Bad Arlberg and Wendelstein. By A. Müller.

The Bird Pictures of Lazarus Roting (1614). By E. Stresemann.

Contribution to Our Knowledge of *Cyanalcyon quadricolor*. By A. Laubmann.

Nomenclature of Palaearctic Birds. By W. H. J. Götz.—*Dryobates medius laubmanni* (p. 321) new name for *G. m. transcaucasicus*.

In the reviews *Sturnus vulgaris kleinschmidti* (p. 323) is proposed by Laubmann.

Proceedings Bavarian Ornithological Society. XV, Heft 4. November 15, 1923. [In German.]

Ornithology of Oberhozen (South Tyrol). By B. Hoffmann.

Birds of Upper Irtysch by G. Poljakow. Review by H. Grote.—An annotated list of 348 species.

Contribution to Our Knowledge of the Order of Molt of the Primaries in Alcedinidae. By A. Laubmann.

On the Systematic Position of the Paradoxornithidae. By E. Stresemann.

New Forms of Alcedinidae. By A. Laubmann.—*Alcedo atthis götzi* (p. 390) Amami-o-shima, Japan, and *Halcyon chloris stresemanni* (p. 391) Franzosishe Isl., Bismark Archipelago.

Proceedings Bavarian Ornithological Society. XVI, Heft 1. June 15, 1924. [In German.]

On the Kingfishers of German New Guinea. By A. Laubmann.

On *Centropus fischeri* Reich. By E. Stresemann.

Bird Life of Bad Nauheim. By L. Schuster.

Canary Studies. By J. Gengler. Three races considered.

Obituaries of Salvadori and Tschusi.

Contributions to the Breeding Habits of Birds with Consideration of Oölogy. I, No. 2. November, 1924. [In German.]

Contains many short accounts of the breeding habits of various species. One by A. Szielasko on the breeding of *Pygoscelis papua* and one on parasitic birds and the relation of their eggs to those of the foster parents, by R. Praessler.

This new journal is edited by Dr. L. v. Boxberger. Berlin-Zehlendorf, Kleiststrasse 2.

Ornithological Articles in Other Journals.¹

Wilfrid, Rev. Brother. Notes on the Canada Goose in Captivity. (*Canadian Field-Naturalist*, September, 1924.)

Lewis, Harrison F. List of Birds Recorded from the Island of Anticosti, Quebec. (*Canadian Field-Naturalist*, September, 1924.) Continued. (Concluded in October.)

Munro, J. A. A Preliminary Report on the Destruction of Birds at Lighthouses on the Coast of British Columbia. (*Canadian Field-Naturalist*, October, 1924.)

Munro, J. A. Miscellaneous Bird Notes from Southern Vancouver Island. (*Canadian Field-Naturalist*, October, 1924.)

Canadian National Parks. Official Canadian Record of Bird-Banding Returns. (*Canadian Field-Naturalist*, continued in Sept. and Oct.)

Rintoul, Leonora J. and Baxter, Evelyn V. Report on Scottish Ornithology in 1923. (*Scottish Naturalist*, July-Aug., 1924 and concluded in Sept.-Oct.)

Chapman, F. M. The Andes: A New World. (*Natural History*, July-Aug., 1924.)—Account of the life zones and casual mention of birds.

Ott, F. R. The Beau Brummel of the Birds. (*American Forests and Forest Life*, Sept., 1924.)—The Ruby-throated Hummingbird with several photographs of nest and young.

Shafer, Don C. Strangers in the Cover. (*American Forests and Forest Life*, October, 1924.)—Introduction of the Ring-necked Pheasant.

Scott, James E. What We Owe the Wild Turkey. (*American Forests and Forest Life*, November, 1924.)

McGregor, Richard C. Birds of Ilocos Norte Province, Luzon. (*Philippine Journal of Science*, August, 1924.)—An annotated list.

Grange, Wallace B. Ruffed Grouse Traits. (*Forest and Stream*, October, 1924.)

Taylor, W. P. and Bryant, H. C. Relation of Wild Birds to the Foot and Mouth Disease. (*California Fish and Game*, July, 1924.)—Investigation of twenty-nine species possibly connected with the spread of the disease shows no evidence whatever, but as the Turkey Vulture has been seen feeding on carcasses of animals that died of the disease it is recommended to shoot such birds as are actually seen feeding. The shooting or disturbing of smaller birds, even if there was evidence of their being agents in the transmission would do more harm than good by scattering those which were not killed.

¹ Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

Shufeldt, R. W. Our Wild Ducks, Geese and Swans. (*Popular Education*, Sept. 1924.)

Shufeldt, E. W. The White-Breasted Nuthatch. (*Normal Instructor and Primary Plans*, November, 1924.)

Shufeldt, R. W. Life History of an American Naturalist (continued). (*Medical Life*, August, 1924.)

Ahrens, T. G. Big Game in the National Parks of the United States. (*Der Naturforscher*, April, 1924.) [In German.]

Anonymous. A New Wren from the Southern Alleghanies. (*The Bailey Museum Bulletin*, No. 2, June 1, 1924—mailed July 16.)—*Thryothorus ludovicanus* (sic) *alleghani* (sic). No author's name appears anywhere in the paper but we presume H. H. Bailey is responsible.

Forbush, E. H. Bird Migration and Distribution. During the year ending November, 1923. (*Dept. Pub. Mass. Dept. Agriculture*, No. 129.—Numerous local notes.)

Grinnell, Joseph. Geography and Evolution. (*Ecology*, July, 1923.) A most refreshing consideration of the origin of species and subspecies with which the reviewer heartily agrees.

Penard, Thos. E. Historical Sketch of the Ornithology of Surinam. (Reprinted from '*De West-Indische Gids*' August, 1924 pp. 145-168.)—A very interesting and valuable resume of a subject upon which the author is better fitted to write than anyone else, and he has presented, not a dry catalogue but a readable account which all students of neotropical birds will do well to study.

Hausman, L. A. Observations on a New Type of Winter Feeding Ground for the Fringillidae. (*Amer. Naturalist*, March-April, 1924.)—On the filter bed of a sewage disposal plant at Bound Brook, N. J., Tree Sparrows, Song Sparrows, Juncos and Goldfinches were present in flocks of 50 to 150. It was estimated that each bird consumed 30 larvae or pupae of the *Psychoda* fly per minute, or 1800 per hour, which would mean over a million for a flock of 150 birds in four hours.

Miller, W. de W. Further Notes on Ptilosis. (*Bull. Amer. Mus. Nat. Hist.*, L. Art V, Oct. 31, 1924.)—An important series of notes from original studies including a grouping of the genera of Pigeons, Rails and Hummingbirds according as they are Diastataxic or Eutaxic and a rough grouping of the larger groups of birds on the same basis. Another table of these groups on the basis of the number of Primaries is presented along with notes on the oil gland tuft, after shaft, etc., and on consideration of the presence of natal down, which occurs in Cuckoos and Turacos, contrary to general statements.

Huxley, Julian S. Courtship Activities in the Red-throated Diver together with a discussion of the Evolution of Courtship in Birds. (*Jour. Linnaean Soc. London*, XXIV, Zoology No. 234, June 5, 1923.)—An important contribution to the subject.

Todd, W. E. Clyde. Remarks on the genus *Amblycercus* and its Allies. (*Proc. Biol. Soc. Wash.*, July 8, 1924.)—Regards *A. solitarius* and

Agelaius sclateri as members of the genus *Archiplanus*, while *Amblycercus hol. flavirostris* and *A. hol. australis* he raises to specific rank.

Todd, W. E. Clyde. A New Cuckoo Shrike from Australia. (*Proc. Biol. Soc. Wash.*, July 8, 1924.)—*Lalage leucomela insulicola* (p. 119) Friday Island, Torres Straits.

Todd, W. E. Clyde. Descriptions of eight new Neotropical Birds. (*Proc. Biol. Soc. Wash.*, July 8, 1924.)—Genera *Tangara*, *Icterus*, *Chlorophanes*, *Ateleodacnis*, *Compsothlypis*, *Dendroica* and *Vireosylva*.

Baker, E. C. Stuart. The Game Birds of India, Burma and Ceylon. Part XXXVI, *Coturnix coromandilicus*. (*Jour. Bombay Nat. Hist. Soc.* XXIX, No. 3, Dec. 31, 1923.)—Genus *Cryptoplectron* (No. 4, May 15, 1924).

Wathan, Mrs. M. L. Ornithological Notes from a Trip in Ladah. (*Jour. Bombay Nat. Hist. Soc.* XXIX, No. 3.)—Annotated List of 44 species.

Stevens, Herbert. Notes on the Birds of the Sikkim Himalayas. Part II. (*Jour. Bombay Nat. Hist. Soc.* XXIX, No. 3, No. 4.)

Gill, E. H. N. A Description of the Nests and Eggs of the Common Birds Occurring in the Plains of the United Provinces. Part IV. (*Jour. Bombay Nat. Hist. Soc.* XXIX, No. 3, No. 4.)

Bates, R. S. P. Notes on Hugh Whistler's 'A Contribution to the Ornithology of Cashmere.' (*Jour. Bombay Nat. Hist. Soc.*, XXIX, No. 3.)

Bates, R. S. P. Birds Nesting with a Camera in India. Part I. (*Jour. Bombay Nat. Hist. Soc.*, XXIX, No. 4.)

Chasen, F. N. Notes on the Fauna of Pulan Bulan, Rhio Archipelago. (*Jour. Malayan Branch Roy. Asiat. Soc.* II, Part 1, June, 1924.)—Twenty-three species of birds.

Chasen, F. N., and Kloss, C. Boden. The Malaysian Members of the genus *Fregata*. (*Jour. Malay. Branch Roy. Asiat. Soc.*, II, Part 1, June, 1924.)—Five recognized.

Chasen, F. N., and Kloss, C. Boden. Some Birds of Christmas Island, Indian Ocean. (*Jour. Malay. Branch Roy. Asiat. Soc.*, II, Part 1, June, 1924.)—Twenty species. Also short notes by Chasen on several species in the same number, with arrangement of forms of *Criniger gularis* and *C. gutturalis*.

Arlington, L. C. Birds in the Poetry of the Chinese. (*China Jour. of Science and Arts*, May, 1924).

Wilder, G. D. Migration Notes. (*China Jour. of Science and Arts*, May, July and Sept., 1924.)—In the Peking region.

Cleland, J. Burton. The Birds of the Pearson Islands. (*Trans. and Proc. Roy. Soc. So. Australia*, XLVII, pp. 119-126.)—Nuyts Archipelago.

Stresemann, E. On *Hieraëtus ayresii* and *Spizaëtus africanus*. (*Novit. Zool.*, XXXI, No. 1, March, 1924.)

Hartert, E. Ornithological Results of Captain Buchanan's Second Sahara Expedition. (*Novitates Zoologicae*, XXXI, No. 1, March, 1924.)—Notes on 165 species.

Lynes, Hubert. An Ornithological Visit to N. W. Morocco (Spanish Province of Yebala). (*Novit. Zool.*, XXXI, No. 1, March, 1924.)—Notes on 339 species and an excellent map.

Hartert, E. The Birds of St. Matthias Island (*Novit. Zool.*, XXXI, No. 2, October, 1924).—Near New Hanover. 39 forms listed, of which 10 are new.

Hartert, E. The Birds of Squally or Storm Island (*Novit. Zool.*, XXXI, No. 2, October, 1924).—Lies between St. Matthias and New Hanover; 21 forms listed.

Lowe, Percy R. Some notes on the Fregatidae (*Novit. Zool.*, XXXI, No. 2, October, 1924).—Apparently admits all the proposed forms and names two more. *Fregata minor mathewsi* (p. 309) Queensland, Australia and *F. ariel wilsoni* (p. 311) S. Trinidad Island. We have thus *aquila*, *magnificens* (two subspecies), *andrewsi*, *minor* (six subspecies), and *ariel* (three subspecies). He follows Rothschild in regarding the eastern Indian Ocean as the type locality of *F. minor*.

Schouteden, H. Contributions to the Avifauna of the Belgian Congo. I. My collections from Kasai (*Revue Zoologique Africaine*, XI, fasc. 3).—320 species. II. My collections from Kwamouth (*Rev. Zool. Afr.* XI, fasc. 4).—187 species. My collections from Kisantu, Leopoldville and Kidada (*Rev. Zool. Afr.* XII, fasc. 2).—150 species.

Mertens, Robert. Contribution to the Avifauna of German New Guinea. (*Senckenbergiana*, V, Heft 5-6, December 20, 1923.)—*Lanius schach stresemanni* (p. 228) and *Melidectes torquatus cahni* (p. 229) are described as new.

CORRESPONDENCE

Danger in Bird Traps.

Editor of 'THE AUK':

In view of the large number of amateur ornithologists at present engaged in the new "sport" of Bird Banding, I think it would be a good thing to draw your attention to a fact concerning the U. S. Government Sparrow Trap, which, on account of its simplicity and excellence appears to be very widely used. The full instructions accompanying the illustrated pamphlet (U. S. Dept. of Agr. Circ., No. 170) make it possible for anyone to build the trap at home and it is the home-made product to which I am making reference. The trap I use was made for me by a very capable and neat workman according to the plans and specifications supplied in the pamphlet. I think I am safe in assuming that the workmanship is at least as good as that in the vast majority of home-made traps of the kind. I have, however, not been employing it for banding purposes, but for trapping birds for experimental work. The birds so caught are released in large roomy aviaries made of match boarding and mosquito netting, so constructed that there are no free edges of netting anywhere. The meshes

are so small that the birds (mainly Juncos) cannot push their beaks through them.

If I had been banding these birds instead of keeping them in captivity I should probably still be satisfied with my Sparrow trap for I should never have suspected that there was anything wrong with it. As a matter of fact I found that about 20% of my birds died shortly after being turned into the aviaries. Post-mortem examinations were made on all of them, and the cause of death was the same in every case—subcutaneous inflammation in the region of the lores. There is no doubt that the cause lies in the small wire ends sticking in at the edges of the trap. These—and they appear to be unavoidable—puncture the skin behind the nostrils as the birds push their bills into the corners and through the meshes in endeavour to escape. There seems no reason to assume that the rate of mortality of the injured (about ten per cent. recovered) would be lessened if the birds were liberated instead of being turned into well-constructed aviaries. I have now had my birds for two months since removing the last dead from the above cause, during which time there has not been a single death amongst them.

This seems to me to be so serious a defect in the home-made trap (it would also be found to exist, no doubt, in other types of home-made traps) as to warrant an investigation. It is of interest to note here that in the U. S. Dept. of Agr. Bull. No. 1269 (Returns from Banded Birds, 1920-1923) just issued, "numbers preceded by a dagger (†) indicate recently banded birds found dead at or near the place of banding." Numbers marked in this manner total 332 or about 19.1% of the complete returns—1746. A list of "known causes of such deaths" is given, but this flaw in the home-made trap is not amongst them. The cause given in these cases by the banders, with so large a number of amateurs participating, must in many instances be mere conjecture. There is also this fact to be taken into consideration, that the number of birds found dead after banding does not represent the total mortality, but only a fraction of it—those that are by chance picked up. The percentage quoted above, 19.1, is considerably lower for ducks and water birds and very much higher for the small species that are most likely to be taken in the kind of trap of which the U. S. Government Sparrow Trap is typical. On one page (40) over 56% of the returns are marked as birds found dead shortly after banding. Although this is the percentage on returns, which is a very different thing from a percentage of those banded, it must indicate a very high banding death rate. Surely the matter is one for immediate attention.

If this point is worthy of investigation I think it might be very well at the same time to investigate other points that are open to trenchant criticism in our present system of banding. Personally, I should welcome the appointment of a committee for the purpose of considering all aspects of bird-banding activities as carried out on this continent at the present time. Such a committee might be jointly appointed by the Biological Survey and the executive of the A. O. U., to include selected officers of

both bodies, amongst them, or in addition to them if deemed advisable, at least two *scientifically trained* biologists. If the committee were given time to correspond with Rossitten, London, Aberdeen and other well-known continental banding centers as well as with the officers of the various American Bird Banding Associations and the Cooper Club, it could publish its findings in 'The Auk,' and if found desirable, use its columns for open discussion.

Yours etc.,

WM. ROWAN.

University of Alberta,
Edmonton, Alberta, Canada.

The Bean Goose in North America

Editor of 'THE AUK':

May I be allowed to point out that the Bean Goose, *Anser fabalis* (Latham) has no right to inclusion in the list of North American Birds? In the third edition of the 'Check-List' (p. 85) it is said to be "recorded from northern Greenland," but reference to the supposed records show that in every case the species indicated is the Pink-footed Goose, *Anser brachyrhynchus* Baillon, now universally regarded as a distinct species, but formerly considered to be merely a race of *Anser segetum* (= *fabalis*) by many Danish ornithologists. *Anser brachyrhynchus* is now known to be a summer visitor to the northeast coast of Greenland and has been proved to breed there.

Politically it may be convenient to regard the whole of Greenland as American, but from a consideration of the Ornis, it becomes evident that the great ice cap of central Greenland is the real dividing line between the Nearctic and Palaearctic regions. Just as the west coast of Greenland shows a great preponderance of Nearctic forms, so on the other hand the east side is even more distinctively Palaearctic. This is a point of some importance in the preparation of an authoritative list of Nearctic birds. as several stragglers from the Palaearctic Region have occurred on the coast of East Greenland and nowhere else in America: e.g. *Cornus cornix*, *C. frugilegus*, *Delichon urbica*, *Anser albifrons albifrons*, *A. brachyrhynchus*, *Falco peregrinus peregrinus* and *Numenius arquata*. The claims of all these species to a place in any list of Nearctic birds should be carefully re-considered.

Yours truly,

F. C. R. JOURDAIN.

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England.

NOTES AND NEWS

DR. ADOLF HERLUF WINGE, a Corresponding Fellow of the Union since 1903, died in his native city, Copenhagen, Denmark, Nov. 10, 1923. He was born March 19, 1857 and received his education at the University of Copenhagen. At an early age he exhibited an interest in natural history and when still a student of 18, published his first paper on '*Arvicola* in Denmark.'

While best known from his work on mammals, he devoted much attention to ornithology and published a series of papers on the birds observed at Danish lighthouses. Early in the eighties arrangements had been made by Prof. C. F. Lütken to collect observations and specimens of birds from the lighthouses and lightships along the coasts of Denmark and the preparation of a series of annual reports was begun with the year 1883. These reports appeared in '*Ornis*,' the first two by Prof. Lütken, in German, and the third and fourth by Winge's brother Oluf, in English. Upon the death of his brother in 1886, Herluf Winge continued the work for 25 years, from 1887 to 1910. The first report appeared in English and the subsequent ones in Danish in the '*Vidensk. Meddel. Naturhist. Forening*.' This series of migration reports is one of the most extensive and valuable ever published but unfortunately is not available to students who are not familiar with Danish. Readers of '*The Auk*' will, however, find a review and outline of the first 14 reports by Gerrit S. Miller, Jr. in the volume of this journal for 1897, p. 415. Winge was greatly interested in the fauna of Greenland and in 1898 published a comprehensive list of Greenland birds. This paper of 316 pages, entitled '*Grönlands Fugle*,' is the most complete work on the birds of the region that has thus far appeared. It contains notes on 129 species as compared with 139 in Hagerup's '*Catalogue of the Birds of Greenland*,' 1891, while Schalow's '*Die Vögel der Arktis*' in 1904 credited 161 species to Greenland. The discrepancies between the numbers in these lists are due evidently to more or less conservative treatment of subspecies and certain accidental records. Mention should also be made of his papers on the '*Invasion of the Sand Grouse*,' and on the '*Fossil Birds of Denmark*.'

Winge's work on mammals has been reviewed by Hinton in '*Nature*' for Dec. 29, 1923, and by Böving in the '*Journal of Mammalogy*' for Aug. 1924. Briefly, his most important contributions comprised his reports on the bones collected by Dr. P. V. Lund in the caves of Lagoa Santa, Minas Geraes, Brazil, and published in three volumes under the title '*E Museo Lundii*,' his papers on the origin of domestic animals in Denmark, his monograph on the relationship of whales, recently translated by G. S. Miller Jr., and his '*Pattedyr Slaegter*' in three volumes, completed shortly before his death.

Although Winge may be described as a typical museum naturalist and at the time of his death held the position of Vice-Inspector of the Zoological Museum, he was intimately acquainted with his native fauna

and flora in the field, and at his villa near Copenhagen, protected the plants, birds and mammals with scrupulous care. Accordingly to Böving, he was unmarried, was very well off financially, and left his library, his collections and his fortune to the library and museum of the University of Copenhagen for the advancement of zoological investigation and wild life conservation in Denmark.—T. S. P.

WILLIAM DAILY HOBSON, of Woodstock, Ontario, one of Canada's prominent naturalists, died on October 10, 1924.

Mr. Hobson was best known by his frequent lectures on birds delivered all over the Province of Ontario. He did some collecting, ten or twenty years ago, and a White-eyed Vireo, now in the writer's collection, was his most notable discovery and is probably the first Canadian specimen.

Mr. Hobson spent a good deal of time in his younger days in the gold mining region of the West, and came to Woodstock about 1895, where he lived until his death, doing a very useful work in disseminating a knowledge of nature throughout the province.—W. E. S.

WE note that Dr. J. P. Chapin and Mr. Herbert Lang have been elected honorary members of the "Cercle Zoologique Congolais," in recognition of their work in the Congo region.

W. LEON DAWSON has issued a prospectus for an annual publication to be known as 'Birds of the World' presenting results of explorations in various lands to be carried on by members of the Museum of Comparative Oölogy of which Mr. Dawson is director. A subscription of \$100 a year secures the work and constitutes the subscriber a patron of the museum. For \$40 per year one may secure a less sumptuous edition and become a sustaining member.

THE Cambridge University Press of London announces the publication of a work on 'British Waders' by E. C. Arnold, to consist of 51 colored plates from paintings by the author, together with descriptive notes covering 102 pp. of text. Price £3. 10s.

ANNOUNCEMENT is made of an International Congress on Bird Protection to be held at Luxembourg, April 13-16, 1925, under the presidency of R. de Waha.

THE WILSON ORNITHOLOGICAL CLUB held its annual meeting at Nashville, Tenn., November 28-30, 1924 in conjunction with the Inland Bird Banding Association. An interesting program of papers was presented.

THE ROYAL AUSTRALASIAN ORNITHOLOGISTS' UNION held its annual meeting at Rockhampton, October 15-25. The program announced trips to the Botanic Gardens, Olsen's Caves, Fitzroy River and a five day "Campout" at Keppel Bay.

DR. ROBERT CUSHMAN MURPHY left for Peru on November 27, to attend the Pan American Scientific Congress at Lima, after which he will carry on ornithological investigations along the western coast of South America.

THE DUPONT DE NEMOURS POWDER COMPANY seems to have paused in its extermination of the Crow to attack the Game Refuge Public Shooting Ground Bill, now about to come before Congress. A letter by one "Frank Winch," whoever he may be, has been sent broadcast by E. R. Galvin, director of sales of the powder company, which calls the bill ridiculous and tries to produce the impression that sportsmen are opposed to it. It claims that the Secretaries of Agriculture and Commerce, the Postmaster General and Senators appointed by the President who will have charge of the operation of the bill are politicians, whereas sportsmen should be the ones to take charge of such matters; also that the bill will increase taxation and create useless jobs at Washington.

The arguments are no more convincing than those advanced against the much maligned Crow and the opposition to the bill apparently springs from the same source. Most of its advocates and all the best sportsmen of the country stand for the abolition of pump and automatic guns and the reduction of the bag limit and here is where the powder companies become interested, since this means less demand for ammunition.

With 15,000,000 persons in the United States enjoying hunting and fishing (duPont's figures) the game supply under present laws will not last long and every means possible should be taken to save it. One of the best means is the passage of the Game Refuge Public Shooting Grounds Bill and with powerful commercial interests opposing it, every member of the A. O. U. should write at once to his Congressman urging his support of this excellent measure.

Just as we go to press we are in receipt of another circular letter signed by Mr. A. Felix duPont on behalf of the Company in which he states that the company is, and has always been, in favor of the bill! This is very welcome news, but it seems strange, if the purpose of Mr. Galvin's letter was merely to obtain "opinions on the merits of the bill," that such a vehement and one-sided communication as that of the mysterious "Frank Winch" should have been enclosed. Apparently Mr. Galvin does not speak for the company. He and "Mr. Winch" are the opponents of the bill and not the duPont Company, and may we not hope that the same is the case in the matter of the Crow?

AN UNFORTUNATE mistake in binding certain copies of the October 'Auk' resulted in the duplication of pages 645-660 and the omission of pages 549-564. If your copy is defective in this way will you not return it and a perfect copy will be sent. It is important that this matter be attended to before the stock is exhausted.